

ONLY
58p**NEW** **COMPUTER
EXPRESS**

BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY

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- Green micro arrives
- Games pack on CD
- AIDS virus arrest

ST

- 'Intelligent' football
- The other ST manual
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First compact disc games released for PC clones

TOOLWORKS PC CD SETS THE TREND

Software Toolworks is to launch a compact disc compilation of its top games - the first CD games to run on a PC.

Toolworks hopes the launch of the CD Game Pack will coincide with that of the Headstart CD-ROM PC this spring (Express 611). The computer industry is already buzzing with excitement at the possibilities of this machine which, it is understood, will be sold through High Street stores.

Headstart can rely on the muscle of parent company Philips to get its sub-£1,000 machine to market.

The Toolworks pack will sell for \$99 in the US and a pound-for-dollar price looks probable. It incorporates five games - Life and Death, Chessmaster

2000, Beyond the Black Hole, Gin and Cribbage King and Bruce Lee Lives.

Toolworks will also be launching its own PC CD-ROM interface and drive for about £300. That also will arrive here in the spring.

ST and Amiga owners won't be left out either. The Californian firm is currently working on CD games for the ST and Amiga due out later this year. No doubt the Amiga version will be designed to run on Commodore's CD-Amiga (Express 631).

Many companies are looking closely at compact disc's entry into the home computer market. Code Masters and Rainbow Arts have both announced CD games compilations for the 8-bit machines, although sales thus far have not been impressive. ■



• Toolworks game pack: CD for the PC

No to South African games trade

Talented graphics artist Pete Lyons has taken a stand against injustices in the Republic of South Africa.

He's drawn up a contract stipulating that none of his work can be sold to the troubled republic. Lyons, whose work includes DDT and Gravity, doesn't want anyone profiting from sales to a country which condones racism.

Lyons' contract states that promi-

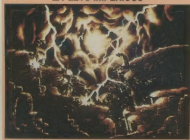
tional material must state that the games cannot be sold in South Africa. Readers of various computer games magazines will see the warning on ads for Micro-soft's Gravity.

Most software houses in the UK already refuse to deal with South African distributors, although games inevitably find their way into the country through informal exporters. ■



• Logitech: hits an offer.

EA GETS IMPERIOUS



Electronic Arts is gearing up for its major launch of the year - Imperious. The complex space strategy game is due for release on the ST and Amiga in April. It gives the player the chance to oversee the Earth's development over the next 1,000 years. You'll have to keep a tight control over the economic, diplomatic and military activities of rivals and subordinates in a complicated galaxy. The firm will be hoping to repeat its extraordinary success with last year's hit, Populous. ■

Mouse rival at the tip of your thumb

This week sees Logitech's alternative controller to the mouse - the TrackMan - reach the shops.

The peripheral's manufacturer says the device offers all the advantages of both the mouse and the unfashionable but sometimes useful trackball.

Trackman is an odd-shaped device which is controlled using the thumb. The manufacturer reckons it will appeal to owners of portables and those with over-crowded desks who want to control their PCs with their thumb-tip. It has a hardware default resolution of 3000PI and software-adjustable resolution of between 9000PI and 1,5000PI. It costs £95. Call 0625 413501. ■



Another Asterix game, by Toutatis!

Remember that little French fellow Asterix the Gaul, one of many children's books, films and even a old computer game? Well he's back - in a completely new computer adventure.

The original Asterix game from Maelstrom House wasn't too hot, but now The Edge is to release a game which boasts cartoon-style

graphics similar to those it has successfully employed in Garfield and Snuggly.

There are two parts to the game - one for children as they can mess around with the graphics and one for the serious games player with challenging obstacles. It should arrive in the summer.

Curiously, French publisher

Catal Vaison has recently also brought out a game called Asterix and the Enchanted Stone.

The reason there are so many different Asterix games is that Catal Vaison obtained the license for the game from the comic makers, while The Edge obtained its license from the book publisher, Hachette Dargaud. It



MIT worried by VDU cancer

The risks of electromagnetic radiation from computers should be examined in detail, according to the influential Massachusetts Institute of Technology.

This new danger to computer users - detailed at length in last week's Express - is part of a report published by the American Institute of Standards and Technology at MIT.

It states that many household products, such as computers and electric blankets, radiate harmful fields.

Smaller ones have once again been drawn with overhead power lines which various researchers suggest are responsible for cancer, leukaemia and other disorders. MIT researchers says the whole subject should be taken more seriously and scrutinised in detail. ■

TIME SAVER



Nothing for that familiar program to load from your floppy can be so annoying, even if it takes only a few seconds.

And if it's really driving you nuts then it might be time to get your hands on an internal ROM-based PC board.

All you have to do is install the board, transfer the program onto EPROM, and plug the chips into the board. Every time you load up it will take just a quarter of a second or so. The board comes with appropriate driver software to transform it into a very fast silicon disk.

The device comes from St Albans-based Chipmunk Ltd, strangely, the firm is reluctant to reveal how much it costs.

Anyone hoping to wrangle a price out of the company can call 0727 40476. ■

Bell Labs finally achieves 'impossible' dream:

THE WORLD'S FIRST LASER PROCESSOR

The world of computing has seen the first glimmer of what will prove to be the new age of information technology. Scientists at AT&T in the US have developed an processor which works using light.

The experimental machine uses laser beams instead of electricity as the medium for transmitting information around a computer. As a technological milestone, the announcement has already been put on the same scale in computing terms as the Wright brothers' first flight was to aviation.

Optical computers of the near future will be able to run at 1,000 times the rate of today's fastest machines. The breakthrough also has exciting ramifications for those involved in speech synthesis and optical recognition - developments in these fields have been hampered by the speed of current computer technology.

Scientists at AT&T-owned Bell Laboratories have been working on this project for the last five years. They have sought help from colleagues from academia and industry around the world, including Britain.

ALTERNATIVE

The search for an alternative to conventional silicon computing was prompted by the realisation that the limits of the material's physical properties have almost been reached.

Optical computing's principle advantage is its speed and ability to multi-function. It will be able to perform millions of instructions simultaneously.

Bell's experimental computer is a two-foot square of curious lenses and beams, owing little in appearance to computer models of today.

It actually runs at about the speed of a 286 PC - snail-like by state-of-the-art standards. But Bell says this is only a



"We began working towards an optical computer when most people felt it was an impossible task. This is a major step toward such a computer." Alan Huang, head of Bell's optical computing research department.

primitive model of what will be the world's fastest supercomputer within the next 10 years. The technical specification of the beast will leave the silicon machines of the new century behind.

Alan Huang, Bell's head of optical computing research, commented: "We began working on an optical computer when most people felt it was an impossible task. This is a major step towards such a computer."

He added: "It's the difference between going to a library and being able to read information from one book versus being able to read from all the books in the building at once."

Huang employed the help of Scottish scientist Professor Desmond Smith of Heriot-Watt University in Edinburgh. He predicted two years ago that such a computer could be developed, but lacked the funding to go ahead with his project.

"We owe him a great debt of gratitude but it is basically a question of resources," says Huang. "Here we are lucky enough to have access to certain equipment that together would cost more than \$50 million."

PRISMS

The computers of today work using electrons which flow around a silicon-based processor. Optical computing utilizes an array of lenses, mirrors, prisms and lenses which shoot beams of light around at 180,000 miles per second. Nothing else moves as fast as a photon - a light particle - so optical systems offer the ultimate speed.

More specifically, the Bell system is based on a cluster of gallium arsenide optical switching elements, each of which is capable of processing one billion pieces of information every second. ■



Intelligent football game is 'the ultimate' simulation

MicroProse is currently working hard on what it claims will be the ultimate football-playing simulation.

Game designers are putting together a formula for a game which uses artificial intelligence. It views the game from the back of the pitch and gives the player control over just one footballer.

But instead of simply chasing after the ball, the player has to interact with computer team-mates and move into advantageous positions on the field.

MicroProse is considering giving

control over more than one player, perhaps a winger as well as striker, but says the ramifications have all to be studied.

MicroProse Soccer II is no more than a demo at present but it looks impressive. The real thing will arrive at about the same time as the World Cup finals. ■



• MicroProse Soccer II promises intelligent interaction on the pitch.

Problems at Apple's core

The man appointed by Apple to turn the Californian firm into a disciplined outfit has resigned.

Allan Z Loren last week quit his post as US sales and marketing president after three years. The move has prompted a high-level reorganisation which includes the promotion of European boss Michael Spindler to worldwide vice-president.

According to Loren, his resignation was "a personal decision", but it would appear that his attempts to tighten up Apple's operations through a more disciplined approach were met with some resistance.

This is not the first time the company has felt growing pains. Apple has had a difficult metamorphosis into a corporate entity.

Loren is reported to have clashed with a number of old Apple managers because of his disciplinarian approach to business, and it is said to have not been the most popular executive in the company's history.

The management reorganisation follows poor financial performance largely blamed on Apple's slowness in introducing new low-cost machines. ■



New light gun pack for games console buyers

NINTENDO OFFERS GUN AND GAMES

Nintendo is to offer console buyers a bundle of games and gadgets in a new attempt to win the British console market.

The Action Set will include Nintendo's 8-bit console with the usual two household controllers, a "ranger" gun and a double games cartridge containing popular games Super Mario Brothers and Duck Hunt. The latter gives gamers a chance to try out the light gun.

UK distributor Sevil is only the latest in a line of companies which have attempted to emulate the Nintendo's US success here in Britain. A series of half-hearted marketing campaigns and unfinished projects have left the machine

a long way behind its main rival, Sega.

Sevil, which also sells board games such as Trivial Pursuit in Britain, says the time is right for the Nintendo. More than 30 million Americans have already bought the system, but in the UK its popularity is not so high. The Nintendo machine is five years old.

The Action Set will be available in the spring. Although no price has yet been fixed, it is likely to cost between £80 and £100.

Sevil is also to start selling the Gameboy handheld with five games - Tetris, Super Mario Land, Golf, Tennis and a version of Breakout. Sevil is on 0473 229941. ■



• Nintendo: gaming for victory

Juice up the portable

Zeuth has announced what is described as a leap forward in battery technology for people who own a SuperSport laptop computer, writes Bob Konsens.

For the price of £225, users can buy a Zeuth SuperSport 386SX when the pack comes free, the Rapid Charge No-Cad.

Battery Pack claims to be maintenance free - unlike conventional rechargeable batteries.

"Conventional systems require a complete recharge every few cycles to maintain battery life," claims Zeuth.

Zeuth says that the pack now offers a hassle-free battery recharge that

will have "the same punch in two years time as the day you bought it". And, connected to the mains, the pack will completely recharge in just three hours.

The unit is as "light as pencil" and the pack offers an absolute minimum battery life of three hours. For more details, phone 0628 68558. ■

Hot chips

An extraordinary new microchip has been developed by Japanese giant Fujitsu which is capable of an unparalleled one trillion operations per second.

However, such is the intense activity on the chip that it heats up to such an extent that it is rendered totally unusable. Fujitsu recommends future users to work at an environment where the temperature does not exceed minus 200 Celsius. ■

Amiga music bundle in US

MIDI music software specialist Dr T has announced a joint bundle of products from itself and Casemodone in the US, writes Jason Holborn.

The bundle consists of a specially-priced A2000 HD computer with Dr T's MCS 3.0 sequencer, Copyist Apprentice scoring package and a coupon for a synthesiser editor or patch librarian at the customer's choice.

According to Al Hoppers, boss of Dr T, this is the first time that such a bundle has been aimed squarely at the serious musician, and is a sign of increased interest in the Amiga among musicians. "Serious musicians and professionals are catching on to the fact that the Amiga does things that no other computer does," Hoppers adds.

The company hopes that Commodore in the UK will agree to a similar pack. The firm is known to be cooking up something which will be announced within the next few weeks.

New from Dr T is the latest version of its highly-successful MIDI sequencer, MCS 3.0 boasts a revised user interface with new *Autolife* capabilities. *Autolife* offers two 16-channel banks of on-screen graphic displays, real-time display and generation of any MIDI controller, and VU meters to show MIDI activity.

With the inclusion of Dr T's new Phantom SMPTE time code generator, MCS 3.0 can be used to bring together music and video, using industry-standard time codes. For professional users, MCS 3.0 even allows remote control of the Forest R8 MIDI tape recorder.

For more info, contact Dr T's UK distributor, NCM on 01-724 4104. ■

Book-sized PCs multiply

Anyone looking for a new answer to the problem of portability could soon find one. A range of book-sized machines is about to come on the market from Toshiba, NEC and Epson, according to Japanese newspaper sources.

Toshiba will unveil an 80286-based, book-sized AT-compatible model that is much faster than its previous 80C86-based Dynabook, although its enhanced communication features will raise the price to £1,700.

Seiko-Epson's new offering is likely to cost around £600 and carries with a built-in 3.5-inch floppy disk drive. It's also expected to be compatible with NEC PC9801 personal computers, which are popular in Japan.

NEC itself is also rumored to be releasing a book-sized version of its PC-98LT 86000, with an embedded V50 microprocessor. At £625 it will be £1,250 cheaper than the PC-98LT, but will only run 500 programs to the 98LT's range of 4,700.

It seems you still judge a book-sized by its program cover. ■

Extradition proceedings under way in extortion case

PC AIDS VIRUS: MAN ARRESTED IN STATES

A man has appeared in an Ohio court accused of organising the so-called computer AIDS virus which hit PCs around the world at the end of last year (*Express* 601).

Joseph Popp has been refused bail and will be remanded in custody pending reports into his psychiatric state of health. Popp, a 39-year-old doctor of zoology, was arrested by officers of the Federal Bureau of Investigation last Thursday night (February 11). The FBI had been working in conjunction with Scotland Yard and the US Computer Emergency Response team. The British authorities have requested that he be extradited.

Popp is accused of involvement in a large-scale computer fraud operation. At the end of last year 35,000 disks were sent out to PC users around the world -

the large majority came into the UK and were directed at subscribers to a leading PC news magazine.

The software purported to evaluate a user's risk of contracting AIDS by asking a number of questions concerning sexual activity and preferences. However, the program would only run if installed on a hard disk.

Once installed the 'Trojan horse' program set about corrupting the hard disk's root directory. This set off an incremental counter which kept track of the hard disk's activity.

After 90 resets all files became encrypted, rendering the disk unusable. Users were invited to send \$378 to the PC Cyber Corporation which would then send back a decryption program. The address given was a box number in Panama.

A spokeswoman for Scotland Yard told *Express*: "This is the biggest operation yet that our computer crime squad has had to deal with." She said the police are confident extradition will be granted within 60 days.

During his court appearance Popp said that he had recently been seeking psychiatric help in Cleveland and had been under the influence of mind-altering drugs. He said this could damage his chances of defending himself adequately.

The US attorney's office in Cleveland said that Popp had been studying the AIDS disease in Africa where he had worked for the World Health Organisation. He has no obvious background in computers.

If he is brought to Britain, Popp will be tried under the Theft Act for allegedly demanding money with menaces. ■

PSION'S SOCK SHOCK



Psion has hit the high streets again as major software retailer The Sock Shop has opted for Psion PD5200 computer systems at the point of sale for British and French outlets.

The small Psion hand-held computer is used as a bar code reader to scan purchases and returns, while details of stock are now stored on Datapaks and fed into company headquarters on a weekly basis to update centralized sales information. Other high-street retailers already making use of Psion systems include Marks & Spencer, Debenhams, Alcon, GPO Pearls and Wadsworth. ■

Green PC to clean up

An environmentally-friendly PC has been developed by London-based firm Systems Exchange.

The Inetcol PC is built without using the harmful chlorofluorocarbons (CFCs) which destroy the ozone layer, and is housed in a reusable box. The green machine's internal circuit boards are also printed without using CFCs. Whereas most manufacturers use CFCs to clean the boards, Systems Exchange says it will make do with water.

The most extraordinary feature of the machine is its casing - made from recyclable polycarbonate. This is a combination of vegetable oil, polyurethane and pulverised ash (the waste from coal-fired power stations).

The green PC should be available by Easter with prices starting at £820 for the entry level 80386 XT, rising to £2,000 for a 386 model. Call 01-224 6333. ■

Bull shift

More evidence that the big boys in the computer business are struggling come last week as Groupe Bull, France's largest computer manufacturer, announced plans to shed 1,200 jobs. The job losses are part of a complex series of cost-cutting measures aimed at coping with the lower demand for high-end computers throughout the European market. ■

Windows gets the Word

Microsoft, renowned for its industry-standard BASIC language and DOS operating system, has created what the company believes to be the ultimate in word processing, writes Jerry Gewirtz.

Word for Windows is a version of the popular word processor designed to run on powerful 80286 and 80386-based PCs, taking advantage of the Windows graphical user environment.

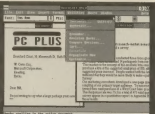
Previously, PC word processors were restricted to

rudimentary command-line interfaces making them extremely difficult for novice computer users to get grips with. But Word for Windows is set to change all that by leading the transition from character-based to graphics-based word processing.

All commands within the program are accessible via a series of pull-down menus, and options such as margins, fonts and italics are presented graphically on-screen and are easily controlled and revised.

Microsoft has spent a long of time testing the new word processor to ensure its integrity before being released. "This product has probably undergone more testing than any other in Microsoft's history", said David French, Microsoft's marketing director. "In the UK alone over 50 corporations have been involved in the beta test programme."

Word for Windows will be released soon with a price yet to be announced. Contact Microsoft on 0734 500041. ■



Word, Microsoft's well-regarded word processor, now available for the Windows system.



Player Manager: Anco hopes it will follow the success of Kick Off.

Player Manager kicks off

Player Manager, Anco's follow-up to football simulation Kick Off, has finally arrived for the ST and Amiga.

Kick Off's well-documented success has left thousands of addicts waiting for a game which combines the action of the original with some on-screen strategic play.

Player Manager is certainly comprehensive and promises to be a huge hit. It costs £19.95. Other versions will follow shortly. ■

Help for Howe

The hard-pressed data protection registrar, Eric Howe, is to recruit more staff in his drive to make sure computer data is used properly.

Seven new members of staff are to start work this week, as well as an extra legal adviser.

Said Howe, "I want to begin working on issues of growing importance, for example the use of data in connection with police and health systems, and the use of the government data network."

The Data Protection Registry's role is to protect people from the adverse effects of information technology, and it was set up to monitor information computers can hold about people – and what information people can extract from computers. ■

Coin-op graphics from a home games machine

HIGH-SPEC CONSOLE HAS DUAL CHIPS

Arcade game manufacturer SNK is to launch a high specification games console based on 16-bit technology.

The new machine – called Neo Geo (New World) – will come with two chips – both the Motorola MC68000 and Zilog Z80A processors.

The games cartridges will also be capable of transferring graphics data at 320 megabits per second, offering real

arcade-style graphics speed on a home system.

For the first time on a games console, players will be able to record high scores with the aid of an accompanying IC card.

Not surprisingly this new system is expensive. The machine itself will cost \$8,000 yen (£2790) in Japan with games cartridges weighing in at an unprec-

edented 28,000 yen (£130). Entprising importers which manage to convert the system to UK television standards will probably be charging about £350 for the hardware and £350 for cartridges.

The console is to be launched in Japan with six game cartridges. SNK expects sales in the East to reach 300,000 in the first year of the console's release. ■



Game on...

London played Manchester in a five darts match recently – and neither team left home.

By using two dart boards designed by Heber Electronics and linked by Dowdy's Quattro 529 modems, each player could watch the progress of the game and see his opponent's score being recorded as it happened.

The boards are manufactured by Wellow Leisure Products and the electronics within the brackets mean players can choose from a number of games including playing against the board's various skill levels.

Quite what prevents players cheating when they cannot see their opponent is not clear, and publishers are not thought to be overly worried by the device.

Of course if you really want a challenge, the modem link means a game with Eric is only a phone call away... ■

Chalking up a new success: Tony Reynolds (left) of Heber and Andy Ylving of Wellow.

Epson recalls 100,000 danger PCs

Epson in Japan has been forced to initiate the biggest ever computer recall operation.

The firm has found defective parts in the power charger units of its PC-286L, LE and LF PC compatibles. Epson fears that the fault could mean dangerous overheating. Apart from emitting a horrible smell, it means there is a serious risk of the computer going up in smoke – especially if connected to an AC adapter when the internal battery runs down.

The defective parts of 105,500 PCs will have to be exchanged in machines which were sold in the period December 1987 to December 1989.

The cost of this operation is a staggering one billion yen (£40 million).

Epson has spent much of the past two years engaged in an aggressive fight to catch up with Japanese market leader NEC, and has enjoyed considerable success – although some analysts suggest that Epson's growth has been too rushed.

The biggest computer recall in the UK only affected a few thousand owners and was undertaken by Amstrad last year when it was found that hard disk versions of some of the company's high-end PCs were faulty, at Newbyte's.

Spreading the net

Acorn's next computer networking conference will offer a wider range of solutions for teachers and administrators as well as applications outside education, it was announced this week.

The conference, to be held from July 3 to 11 at Kent University, Staffordshire, will consider Ethernet systems and wide area networking, as well as differing network protocols and operating systems.

Contributions from delegates are being invited on virtually all aspects of education, plus health and healthcare; automation; measurement and control; and business uses of networking.

New Who's Who guide

Market is publishing an expanded version of Who's Who in the UK information Technology industry, which will contain details of British companies, their addresses, products, services and the names of key staff – with information updated every three months.

Call 01-646-8421. ■

Back-bench MPs in extraordinary argument

TORIES CLASH OVER ANTI-HACKING BILL

Attempts to outlaw hacking are being endangered by an argument between Tory MPs Emma Nicholson and Michael Colvin.

Colvin, who is hoping to pass a private member's bill later this year, has hit out at Nicholson for attempting to add three amendments to his Computer Misuse Bill. Nicholson spent most of last year attempting to push through her own bill outlawing hackers. Her efforts came to nothing.

In an interview last week, Colvin told Computer Weekly: "I know she wants to put forward some amendments and I've said 'by all means put a marker down for them, but don't for Christ's sake try to latch them onto my bill before the committee stage'."

Colvin fears that his bill, already a complex one, will be spoiled by Nicholson's extra clauses. "Any attempt to widen the bill's scope will lead us into a minefield from which it can only emerge in tatters," he said.

Colvin's bill proposes that computer hacking be made illegal with fines of up to £2,000 and a maximum prison sentence of five years. Nicholson wants the bill to cover electronics eavesdropping and the acceptance of computer evi-



• Nicholson: accused of riding on Colvin's bill.



• Colvin: fears of over-complicated legislation.

dence in court. There is also a 'mystery amendment' which will be revealed by her at a later date.

Colvin said: "Nicholson should use the committee stage to air her views, not make my bill her vehicle."

Nicholson, however, says she will

not withdraw her amendments, claiming that the new clauses will not harm the bill's chances in the Commons.

"Colvin's fears are unfounded," she claimed. "As one of the bill's sponsors I will do everything possible to see it through." ■

Hackers force EC to move

A lack of computer security at its Brussels headquarters is forcing the European Commission to consider a move to a safer site.

The EC is worried about a lack of suitable data protection and anti-hacker laws in Belgium and wants to move its computer systems to neighbouring Luxem-

bourg, which has much stricter laws. The Commission has suffered half a dozen attacks from hackers over the past six months.

The EC already has a systems house in Luxembourg, a site which is likely to grow in importance over the next few years. ■

Ten-year-old saga continues

More details of Origin's latest game in the ten-year-old Ultima saga have emerged this week.

Announced at the CES show in Las Vegas earlier this month Ultima VI: The False Prophet is the first of the award-winning series to be designed entirely on the IBM.

The game features superbly-crafted animation and special effects which take full advantage of 256-colour VGA/MDA graphics, as well as VGA.

All gameplay is menu and icon controlled, and is accompanied by a full-length musical soundtrack that supports all major sound boards including Roland, Creative Labs and AdLib.

A special limited edition of the game will



• Ultima VI: Out soon

be available soon for £29.95, along with The Official Book of Ultima from Origin and Computo Books. ■

Fujitsu dries out

Fujitsu Europe announced on the last day of January that its main European manufacturing plant is back to volume production after severe flooding brought it to a standstill in mid-November.

During the afternoon of November 14, 1989 in Mito, Spain, where the Fujitsu plant is sited on a local industrial estate, the average yearly rainfall for the area, 500cm, bucketed down in the space of just two hours.

While an hour of the downpour the river bank upon which the estate stands was overwhelmed by the rising torrent – and so were two weeks' worth of components. By evening the plant was trapped, and some workers were trapped on the premises until 3am, before being rescued by the army.

In addition to the loss of stock, Fujitsu had to write off the main data processing system and three main power transformers.

"Fortunately," commented Hideo Igarashi, technical support director at the Malaga plant, "the backup tape contained a full inventory from the previous night." ■

COMMENT

Two Conservative MPs squabbling over computer security legislation could harm the anti-backers cause – and the Government won't help.

Hackers all over Britain will fall about laughing this week at the news that two anti-hacking Conservative MPs are busily tripping each other up in the probable detriment of a bill designed to outlaw the practice.

Tentatively cast as the wronged party in this latest fiasco is Michael Colvin, whose recently-published Computer Misuse Bill is due for its second reading on February 9.

Putative villainess of the piece is his back-bench colleague Emma Nicholson, whose own private member's bill on the topic failed to become law in the last session.

To Colvin's dismay, Nicholson plans to propose at least three amendments to his bill, which he believes will overload it with clauses and ensure that it becomes bogged down at second reading. The bill already runs to 19 clauses, which may sound onerous compared to most legislation, but actually represents a rather ambitious campaign for a private member's bill.

DIVIDED

The system is heavily weighted against non-governmental bills, and attempts to force through legislation on subjects where opinion is firmly divided – abortion and Sunday trading spring to mind – almost inevitably founder and are talked out of time.

Without having sight of Nicholson's amendments, it is difficult to say how much they may affect the bill's chances, although off-hand it seems safe to assume that any proposal on the admissibility of computer evidence in court is one that is unlikely to slide through the Commons without rigorous examination.

Looking at the dagger-drawn wrangle from the outside, what is particularly disconcerting is the seemingly-

adolescent manner in which the affair is being conducted.

Mental pictures arise of a grumpy-kneed master Colvin grasping at his chest a favourite toy not to be shared by the hard-grip next door. There is an equally exasperating image of little miss Nicholson demanding a share of Michael's Super Death Ray water pistol because she has broken her own.

The fanciful picture is in no way weakened by Nicholson's plan for a third 'mystery' amendment which she is not telling anyone anything about until the second reading. 'Yah, boo, sucka!'

In all probability, the simile is an unfair one. But it is virtually incomprehensible to anyone outside Parliament that two MPs – and from the same party at that – who both fervently wish to see hacking outlawed should be attempting to outflank one another at second readings rather than pooling their forces before bills are drafted.

SIDESHOW

Ultimately, though, it is necessary to recognise that this bickering is no more than a sideshow to the Government's binned refusal to get off its collective backside and take a stance on the whole area of computer security.

The passage of legislation in the field should not rely on the vagaries of private member's bills or the ability of interested MPs to refrain from bickering about which proposed clauses should have precedence and which should be sacrificed in order to get anything through at all.

The private member's bill is not a sensible vehicle for introducing proposed legislation covering an area as vivacious and important as the misuse of computers; sadly we must conclude that the Government has not the wit to realise it. ■

FROM The ARCHIVE

ONE YEAR AGO

Commodore astounded the world by announcing a new low-end business bundle, PC cuts, improved financial results and further senior management changes. Or was that the year before? Or the year before that? Anyway, it happened again...

The shoot-'em-up specialists shot the newly-revealed Konix Multi-System console down in flames when four of the leading software houses revealed they wouldn't be writing any games for it. Since when, not a lot has been heard.

Atari announced the first in the Battlecade series of war games, *Borodino*. Based on the French/Russian Napoleonic battle of the same name it was touted as a 'major innovation' and 'the first of many'. The success of *Borodino* and the subsequent release of *Annals* and *Assault* would seem to bear this out.

Tynesoft launched a new label, dedicated to the theme of horror and cleverly called *Horrorsoft*.

Although the first game, *Personal Nightmares*, was well received, things were starting to flag until the company signed up the lovely Elvis – who has since lent a certain ghoulish credence to their covers.

The Sun nearly wet itself with glee over its 'exposed' of Sir Clive Sinclair's fiancée, Bernadette Tynin. They dinked over her age (at 32 she was younger than one of his children) and gave her £2 and a 154 – and one of the main reasons why she impressed, 'computer whizzkid Sir Clive "Brainbox" Sinclair'. Sadly, the union was not to be.

TWO YEARS AGO

Artisoft announced that it was pulling out of the UK market in the wake of a management buy-out in Germany. The company had failed to meet targets during the vital September to December pre-Christmas period, and longer term had failed to make any real impact on the market.

Having bought PSI, the previous September, joystick firm Konix was busily trying to off-load its newly acquired distribution company, with rumours abounding that it had been supplied with 'inaccurate or insufficiently detailed information'.

The third, consecutive profitable quarter for Activision was announced and signs of satisfaction heaved over the company's 'rejuvenation'. Following the success of its Macintosh HyperCard products, Activision also announced further expansion of its non-leisure activities... These lapsed two months ago.

The great cloneset boom of 1988 carried on without W H Smith, when the High Street giant cut back its business software range to half a dozen titles. Having recognised that it was not perceived as a business retailer, the company decided to concentrate on the leisure market.

Teleconnect and Level 9 were still angling about their much publicised split. Only three of the original four Level 9 adventures had been released, and Teleconnect had complained that the graphics were 'abysmal' and 'dead boring'. Level 9 hit back by insisting the split was 'amiable' – which spared Teleconnect its furious denials.

When both firms started blaming each other for not co-operating on the release of a joint statement at the time the split was announced, it all got quite exciting for a while...

Sources: New Computer Express, Computer Weekly, Computer Trade Weekly, Microcomputer, PC Dealer, Computer Talk.

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NEW READERS START HERE

Funny old business, computing. We 'experienced' ST users - and by that I mean anyone who's been using the ST for more than six months - find it very difficult indeed to remember just how baffling the whole business seemed once upon a time.

Do you recall your first glimpse of that peculiar arrangement you've come to know so well - the desktop? Do you remember the days when making a mouse behave was just completely beyond your ability?

Well, at this very moment there are thousands of new ST owners out there in the very quantity. So you ask, somewhat uncomprehendingly - hardened as you are by familiarity, why don't they read the manual? Coder said, find done, and reader read that understood.

The trouble is that any new computer

manual is always the last job anyone wants to do - and the job that always ends up being done by the people who know the machine inside out. Which takes us back to my starting point, about how difficult it is to remember what it was like...

How trouble may have gone South, because you can get your hands on your Second Manual, the latest edition of which is now available from Nottingham's very wonderful ST Club.

Written by Andreas Rannet, a Dane with a decidedly, er, individual sense of humour, this 176-page paperback is essential reading for anyone who dares anything more with their ST than play shoot-em-ups.

Written and laid out on an ST - on a 4860 system with Colourset set with a Lendritic using a Mega 2 ST - it is in itself a thoroughly convincing demonstration of what the ST can do.

From a brilliant chapter on getting started, that assumes nothing except the reader's willingness to learn through to a chapter on user groups - what they are and how to find one - to the business, FOI Bulletin boards! Games! Graphics! It has it all. Visually it's only fair to say that the section on ST magazines is evidently in need of revision. It's a while since Mr Rannet saw ST Format.

Your Second Manual is available from the people at the ST Club, 49 Storey St, Nottingham NG1 1LX. Read it and you'll very soon be one of those people who find it difficult to believe they were ever baffled by their ST. And that is an A-one Steve Carney guarantee! (Could be worse, couldn't it.)

PLAYING TIP

STRIDER



If you want to shoot through the levels in Strider, you've come to the right place. Thanks go to ST Format reader, Jan Parnow.

Press the game using F9 and now press and hold the following keys:

Help + 1 + Left Shift

Release all three together and drop down with F10. Now press 1-5 to change levels and F1 - F4 to change stages

ST CLUBS TOGETHER

This column is very much intended to support ventures such as Dave Dean's user-group-on-disk and Graham Smith's demo library (see below). If you run one, or would like to start one, drop me a sample issue, together with a letter giving full details - charge, address, nature of welcome and so on.

I'd be delighted to boost your membership. Send it to: ST Clubs together, Steve Carney, New Computer Express, Beaufort Court, 38 Merrivale St, South-Ball 2NP. Who knows, this could be the start of something big!

HARD DRIVEN IS TOPS

Although the Christmas number one spot is no longer the straightforward measure of which software house has the finger on the pulse of the nation, it is still a much sought after achievement.

Christmas 1989 on the ST - it is now clear - belonged to Demos and arcade conversion Hard Drive. Despite less-than-ecstatic reviews, it topped all other ST games (it's the fortnight ending 30 December). It topped quite a few, somewhat surprisingly, ahead of Chase Stripes Back, Memozob's Dungeon Master edition.

But if Demark is feeling pleased with itself, mighty Ocean must be smirking all the way to the bank. No less than four of its titles, including Robocop, a license that was number one way back last January, occupied places in the Christmas ST chart, with two in the top five. The full ST chart fortnight ending December 30, 1989 looks like this:

- 1 Hard Drive - Demark
- 2 Chase Stripes Back - Mirrorsoft
- 3 Robocop - Ocean
- 4 Chase HQ - Ocean
- 5 Ghoul 'n' Ghosts - US Gold
- 6 Ghostbusters 3 - Activision
- 7 Bomber - Activision
- 8 Unstoppable - Ocean
- 9 Turbo Dribble - US Gold
- 10 Robocop - Ocean

(Chart, copyright Galtel)

DAVE'S PERFORMING DISKS

"I am what you could describe as a 'comp personified', confesses Nottingham's Dave Dean, "I live for my ST." So what's Dave Dean reading this column a fortnight ago, in which I wrote about such people, any reason for making contact? Dave confesses in an eminently and unvarnished style, "to drop up a few more members for my ST club."

Dave, as one of those rarely found and exceedingly reasonable characters, charges no fees at all for matching up members who either like close together or share an interest in, say, programming. All it costs is the price of the

stamp to write in. And there's more - for Dave's group produces a bi-monthly disk, full of FO, reviews posted by members, and art, which, he stresses, is 'useful'.

Pro? Nothing more than a blank disk. Indeed, the only malcontents I'd make is that the club needs more contributors. So if you've just played a game you thought was scintillating - or a lobby-inducingly stupid for that matter - why not write a review and share your opinion with Dave and Co?

If this philanthropic endeavour appeals to you, get in touch with Dave Dean at 5 Alpine Drive, Huddersford, Cumbria WS12 2NL, or phone (05438) 41002. Tell him Express sent you.

FREE FOR ALL

Another such venture is Graham Smith's recently formed Awesome Demos, offering a wide range of the very best in ST demos for nothing more than a blank disk and an SAE.

"The library is really for people who don't have much money," Graham explains, "and don't want to pay £3 for something that really should be free." So it's just the way to get hold of some awesome demos - or would like to contribute some to Graham's library - write to Awesome Demos, 3 Manor Rd, Seaford, East Sussex BN25 3EE, or phone (0323) 896767.

STAR LETTER

Confirmed astronomer and ST freak Terry Calamy from Wolverhampton would like to know whether there's anything on the ST that combines both of the aforementioned elements. Indeed there is, Terry - or so I've tried. I can't claim to know, in fact, I'm still trying to work out how the universe can be infinite and expanding at the same time.

Anyway, in the public domain for £3 - disk MISC21 from Schaller Unit 5, Stratford Park, Wolverhampton, Hants PO7 7BN - there's Planetarium, which, among other things, enables you to dial any position on a world map and see the universe from where you're standing. It works in many resolutions, but requires at least a 1040ST.

For a more sophisticated package, with a fully-documented and well-written M manual, go for Eric Bergman-Torres's The Astronomy Lab, which is one better than Planetarium and works on my machine - ie, ST that is, not traiders or washing machines - again in any resolution.

The Astronomy Lab is available for the cost of £19.95. Contact the ST Club, 49 Storey St, Nottingham NG1 1LX.

By either of these two excellent programs, Terry, and I guarantee you won't be disappointed.

Steve Carney



STARBYTE • £24.95

We haven't seen too many hot releases from Starbyte but this may change with Rings of Medusa - even if the new game bears a remarkable resemblance to the first level of Iron Lord.

The objective is to rid the land of the evil goddess Medusa. However, as she has unearthly powers, it isn't a simple case of tracking her down and thrusting your sword into her gut. Instead, you have the long and laborious job of scouring the land in search of five rings, indeed finding all five is the problem you must overcome to win the game.

Plays of Medusa is set out as a series of nine screens played together to form a large landscape. You must move your character - who looks like the game is a chess game - around the landscape in order that you might peer into towns and castles. To get as much of the land on screen at once, the sprites

are fairly tiny, leaving you with a large area in which to find many castles.

You move around the map using the mouse - by clicking and holding, the character will follow the mouse pointer. Since you have an overhead view of the land, you can literally a town when you are upon it.

By venturing inside, the landscape view is replaced with a detailed look at the town. Presented with a selection of buildings such as stores, temples, a pub and a bank, you can choose which to explore. In this way you'll be able to buy goods and even borrow money from the bank.

During your search you'll also meet rival armies and their lives on the game because they can

wipe out half your team in seconds. Using a set of icons at the bottom of the screen, you can choose to negotiate without war or fight different troops if the need arises.

Most of the game, including buying and selling inside the bank and temple, are made of primarily text screens. Graphics are limited to the excellent overhead views of the landscape and a stationary view inside the towns. As a result, the game is brightly additive to the first hour or so - but give it any more time and you'll start to get bored.

In low level, the programmers recognized the lack of immer-holding material and included numerous other levels but in Rings - no such luck.

AMIGA

TIME DOESN'T WAIT

It is certainly true that five years ago there wasn't a single personal computer available that could match the Amiga, but while we've all been sitting around talking about how wonderful 4,096 colours and stereo sound is, machines like the Macintosh have long since left the Amiga behind.

Palettes consisting of thousands of colours and screen resolutions under 1,000 pixels are no longer leading edges. For an example, take a look at how the Macintosh has progressed since the launch of the Amiga.

Back in 1985 the Mac Plus was the best of Mac technology. Then in 1986 Apple launched both the 68030-based Mac II, and the Mac SE. And since the public inventors at Macintosh have been pushing ever forward, so that these days we have 68030-based Mac IICx with multi-million colour graphics cards that make the capabilities of the Amiga look rather pale by comparison.

After speaking to many producers of Amiga hardware and software, a disturbing trend is becoming apparent. Many frequently blame the situation on not only not up with the quality of Commodore's marketing and support, but the re-announcement of Amiga hardware is causing people to look elsewhere for machines for which to develop.

So what has happened to the machine that Commodore promised us would be able to keep up with any advancements in technology? Is the Amiga really yesterday's machine? Or is this thinking simply a worst-case scenario?

Saying that our favourite device is out of date is a little unfair - the Amiga still has what could arguably be called the best multi-tasking system on any machine - even the Mac MultiFinder and the PC's OS/2 cannot touch Dux!

The design of the Amiga, too, is still state of the art - the way the Amiga's hardware and systems software is put together is a masterpiece of computer engineering and is truly a tribute to those trouble guys who build and wire

Amiga - Amiga, Inc. that is - of the tenuous and sunny Los Gatos, CA.

The arrival of the ECS 1.4 or should that be 2.0? and the 'SuperAmiga' (A2500/50 and A3000) may help to shorten the gap between the Amiga and its main competitors. But if Commodore wishes to put the Amiga back where it belongs in the top, then some major changes to the Amiga display hardware will be necessary.

There have been rumours of a new set of 32-bit graphics chips coming from Commodore that offer tens of thousands of colours and super-high resolution screens. But these are rumours only.

VIRUS ADVICE

Although the common 'load block' virus is practically extinct, the IRQ virus still continues to wreak havoc throughout the Amiga world, writes reader Greg O'Hewitt/Long. This IRQ probably means that garbage viruses such as IRQ work by attaching themselves to the boot of other programs. If the virus hasn't been loaded into memory while you ran the infected program, IRQ will be brought to life before activating the parent.

If you get an advanced warning from a virus killer that an IRQ is in memory, normal procedure is to check the programs within your C: and read directories. However, tracking down infected programs isn't necessarily straightforward.

As long as you have a PD killer - such as AV - the tracing is not difficult, but there are often cases where the infected program can be disguised. This can happen if a cracker program is used to pack an infected program.

If the program was infected with IRQ before cranking load block, the cranking process could very well hide the tell-tale signs that allow the tracking down of such viruses. However, when the cracker program is run, the de-cracker that it attached to it will ignore this advice and restore both the program and the virus.

If you can work out which cracker was used to pack the program, it may well be worth your while to de-cracker the program, run it through your virus killer and then re-cracker it. Most recently packed programs are caught using the excellent Power Packer utility that is available from most PD sources.

SNIPPETS

With the ink barely dry from the last issue of Express, it seems that one of my Amiga wish list requests has been granted already.

Those of you searching for a coding tool that runs your A500 machine into a glorified A2500 look-alike will be pleased to know PB Marketing, on 0895 444433, will release one soon.

Joan Holborn

PLAYING TIP

VIGILANTE

Play the game until you get on the high score table and then enter your name as GREEN CRYSTAL (including the space).

Now, playing the game again, you can press F1 for an extra life or F8 to go to the next level.



AMIGA GAME WEEK

Elite - £19.99

A couple of years ago 3D combat games were all the rage around town. You could hardly miss for Roadbusters took a fling chasing the shelves of computer stores.

Elite didn't miss the advantage either, releasing Overlander for the ST quickly followed by a series of 8-bit conversions. But, at that time there was nothing to be seen of an Amiga version. Now that we're well into 1990, however, the Commodore-compatible Overlander has appeared at long last.

The game is set in the year 2025 (what a surprise, in a world where the human race has ignored the warnings of those gentle weather-men, the green organisations. In fact, the world layer has been completely destroyed, forcing people to make an exodus and to set up camp and live in huge subterranean cities.

To travel between the cities, however, drivers must



come up and brave the harsh ultra-violet rays and take to the freeways.

Naturally people would prefer not to do this, so they get the Overlander drivers to do it for them. These drivers live for the thrill of speed. They will do anything to get money to customise their already incredibly powerful vehicles.

You are, of course, one of those drivers, travelling from city to city picking the jobs you want to get all that lovely, lovely money. Half the money is offered upfront, so that you can buy a few pieces of kit before you set out (you're not going to get very far without fuel - are you?)

Indeed, taken as a demonstration of program-

ming, Overlander is very impressive indeed. The scanned graphics are well drawn and smoothly animated - even the copyright message is in interface and has a spectacular, specially-designed font.

The gameplay isn't at all bad either, even if it is like a lot of other, similar games. The steering control is quite comfortable and the car has enough throttle to get you through, especially with the extra thrust that is so handy.

Overlander may not be everyone's cup of tea, or mug of cocoa, or tumbler of gin for that matter, but those who read Roadbusters as the Amiga will absolutely love this one. I can guarantee it.

HAM FROM BASIC

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WHAT YOU'RE LIKE

If you're a regular BBC user, and hence reader of its regular listings, I can – if you'll excuse me – draw a fairly accurate picture of you. You are in your late twenties or early thirties, professional and with a family, members of which also make use of the computer.

Further, your computer is either an expanded BBC or a Master. You word process, make up spreadsheets or compile databases, and you dabble with a little BASIC programming. You don't approve of 'games' but still, when you are in an indulgent mood, you buy Super'n for the kids.

How do I know all this? (You may reasonably ask: do I know all this?) Well, I must admit to just the tiniest hint of fancy, but, to my credit, I have seen some response figures – for another magazine, I fear – and they make interesting reading. For example, 70 per cent possess either sideways RAM (SWR) or a Master 128.

SIDEWAYS MOST LIKELY

The reason for my sudden interest in SWR is that I have just swapped my ageing BBC for a B Plus 128. This, for those with long memories, was the machine Acorn introduced as a stop gap in 1985. Originally a 64K system, you could buy a little board with an extra 64K of memory giving you four 19K SWR banks plus shadow RAM.

Seemingly a close cousin to the Master 128, the B Plus falls down in some areas – no ADS or better applications, for example. However, if you're looking for a solidly built second-hand machine the B Plus has a lot going for it, including surface-mount chips, built-in DPS and pulsed Acorn SWR. So let's leave it from the B Plus, my 'blast from the past' for this week. Hip, hip, hooray!

BEST FROM BETT

One of the most interesting bits of new hardware for the BBC that was displayed at BETT 90 is called Music 5000 Universal from Hybrid Technology.

This new box, designed to work with other units in the system, gives quality sound output without the use of external hardware. If the details I've just given seem a little incomplete, that's because at the moment it's all the information I've got. However, watch this space for more announcements coming forthwith.

Moving on, you may not have been aware that Sherston Software, another software house still active in the BBC arena, with no relation to the multi-national hotel chain, has gone way down under No. 1 – that is not a new way of becoming bankrupt – in fact, it just means Sherston has set up an arm in Australia. This seems like a nice way to get a ten up.

Seriously though, customers in that part of the world should now have access to much better deals. And this is no little perk, because I've seen the latest Sherston to offer on show.

Teletype is an excellent news-service simulation package aimed at the upper- and secondary age children market, and The Concept Kits for younger children is a sale of three programs using the ingenious Concept keyboard.

Andrew Brown



SIREN SOUNDS

Seven Stars was on the phone just the other day with some very interesting news. It is just putting the finishing touches to a new disk utility that lets CPC owners transfer files to and from PC-compatibles.

The idea is that you save your CPC files onto a 3.5-inch floppy which can then be read by a PC. Any 3.5-inch second drive should do it, such as – ooh, let's see now – the one sold by Seven Stars, for example.

It's a really good idea though, and an absolute godsend for anyone who uses a PC at work and a CPC at home. It's carrying out a full review just as soon as the program's tested.

COLOUR UPGRADES

Following on from Stephen Barrows' letter last week, I've been doing a bit of playing around.

You may remember that Stephen approached his local Dixons to find out if he could buy a colour monitor on his own. The manager said he'd pay for only £50.99.

Well, I've been a touch with the same branch, and that was – alas! – a card-off. Nevertheless, a call to Dixons' head office established that the managers of all the chain's branches were free to split remaining CPC stock as will.

While the CPC was a going concern at Dixons, the machine was sold only as a package. But now that it had been officially withdrawn, end-user machines could be sold according to the manager's discretion.

Good news indeed. Mind you, the Dixons' spokesman reckoned that remaining stocks were now very small. Nevertheless, it's probably worth calling.

WIMPY INTERFACE

A fascinating bit of PD software has come my way, thanks to Uncle Techno himself (for it is he).

Desk is an absolutely brilliant front end for your CPC. If you've seen an Atari ST up and running you'll feel instantly at home. What Desk does is reproduce with amazing accuracy the ST's system of windows and icons. You can select and boot up applications by clicking on the appropriate icons, and store documents etc. in ST-style folders. There's even an Atari-esque wastebasket in the bottom corner for disposing of unwanted files. The on-screen pointer can be moved about via the cursor keys, joystick or AMX mouse.

A series of menus at the top of the screen lets you access the desktop's various functions. Desktop Info brings up a copyright message, while Catalogue gives you a directory of the disk. Control panel lets you change the colour of the desktop and icons, as well as pointer control method, while the File menu lets you carry out disk housekeeping activities like Rename etc. The View option lets you choose whether to have your files sorted by name or type etc.

In addition, clicking on a filing cabinet icon displays your disk's directory structure. This is no less than astonishing.

Desk runs from DW Software of Wiltshire, North Humberstone – a PD library owned and run by David Ware. Even as we speak I'm frantically trying to get hold of the guy's address or phone number, if only to see what else he's got. If you're out there, David, give us a bell!



• Desk's on-screen pointer and incredible ST style display

so your local branch just to see – you too might be lucky and find a colour monitor for just £300.

HARD DRIVIN' (YES, AGAIN)

Seven Stars, in case you didn't know, publishes the wonderful Quilgas printer package for 16m printers.

Well now the company is talking about a new 24-pin printer driver for the CPC. And about time too. That someone wrote one, I mean, not that Seven Stars...

Anyway, the program will be called Microprint, and the idea is very similar to that behind Quilgas. The aim is to get machine-printed output from word processors like Protext and Tisword, programs which are great for shuffling text around onscreen, but don't save the world's most sophisticated printed output.

Microprint will offer such goodies as micro-publications, to give even spacing between words, and downloadable fonts. Indeed, eight fonts will be included as standard, together with a font designer for 201 fonts.

Microprint will work with any Epson-compatible printer, but you will need an 8bit printer port if you want to be able to download fonts.

Price will be £24.95, and you can find out more from: Seven Stars Publishing, 34 Squire's Rise, Marlow, Bucks SL7 3PH. Telephone 06284 3445.

PUTTING THE BOOT IN

Football games are still going out. And, while I washed with listed breath for the CPC version of Atco's new kid-in-tennis Kick DR, I am sorry to say that Gazza's Super Soccer is not terribly good.

Rod Lawton

YOUR FORMAT

PC 10
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NEW! Sega Handie Controller	£39.99	£36.99	Amiga Music X state of the art music package	£229.99	£149.99
NEW! Zipsack Sureshot Supreme Autofire	£16.99	£12.99	Amiga/Atari ST/ BBC monitor plates	£29.99	£14.99
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QDOS DISK FORMAT (PART 4)

The first nine bytes in the physical to logical cross-table table correspond to sectors 0 to 8 on side 0, and the next nine bytes to the same numbered sectors side 1. There is an additional offset for each track to allow for steps between adjacent tracks, so the final sector is calculated by: translated sector + track * sector offset MOD sectors/track.

The CUF of a file is the position of the next byte after the end of the file. It is, therefore, QN0 for an empty file. The block number starts at 0, the byte number is between 0 and 3FF inclusive.

The allocation map is a table giving the usage of each group of sectors. There are three bytes for each group, 12 bits for the file number and 12 bits for the number of blocks in the group, divided by the allocation size. For file number 2, therefore, the first allocation of sectors is identified as 002000 in the map, the next as 002031, etc.

The file number is an index into the master directory, with the numbers allocated as follows:

- Q00 - Master directory
- Q01 - Normal files
- FD0 - Sector map
- FD5 - Vacant sector group
- FD6 - Bad sector group
- FD7 - Non-existent sector group

The master directory is a table of file headers in standard format, but the first 64 bytes of any file hold no information.

This brings us to the end of our investigation of the QDOS floppy disk format. With Toolkit 2 sector read/write hardware, you now have all the information you need to read PC disks on your QL, or to recover deleted files and lots of other interesting things. Have fun.

NEW UP FROM DP

Digital Precision has commissioned a new, attempting, advanced word processor for the QL. Written in assembly language, it will apparently be user-configurable, so that it can be made to look like Quil, or any other word processor.

A surprising number of firms are still supporting the QL. With about 120,000 QLs manufactured, as many as 50,000 could still be in use worldwide - I estimate - so there is still a healthy market for hardware and software.

MEDUSA

Ofline, the outfit which developed the Minerva replacement ROMs, is working on a QL clone which will bear the name Medusa. The machine will use a full 68030 processor, with more RAM and optional plug-in interfaces for floppy disks, SCSI devices (such as hard disks) and printers.

I hope Medusa does better than a similar Polaris project, which got as far as a working prototype and then folded.

John Torofes



OFFICIAL SECRETS ACT

I've just seen the latest magazine and price list from Official Secrets, and anyone seriously into buying software really would be a fool not to join. Write for details to PO Box 847, Harlow, Essex, CM21 5PH.

It'll give you a few examples that might convince you to send in this month's club. How about Level 95 Scaphopod for £7.99? Or you could add eight Informa adventures to your collection for £41.52.

However, it's not all adventure games. I see things like Chessmaster 2100 for £7.99, Nipper for £3.49, Paul Gascoigne Super Soccer for £7.99 and the highly addictive Tetris for just £2.49. All of them, I must admit, are excellent.

Official Secrets also sells other essentials of computer life, like typewriters and printer ribbons, blank disks and software books, and once again these are all very reasonable prices. As far as saving time is 'Don't delay, join today'.

As well as offering all this, Official Secrets deserves a mention for the Release Schedule which contains the expected release dates of new games from major - and sometimes minor - suppliers. The prices Q6 gives are all full retail, so by the time the game's released and you've set aside your £15, you discover that Official Secrets is offering it for a tenner.

Expected in January - it says here

Windwalker from Mindscape and X-Out from Rainbow Arts. So, instead of rushing to the shops and paying the full price, join Official Secrets and save yourself a fortune. Mind you, you'll probably spend one as well.

MORE LANGUAGES

Take your C64 into 1992 and let it learn lots of foreign languages in order that it might converse with its European comrades. Not that many of them will speak French, Pascal, C, COBOL, Ada, Logo, Plot or Video BASIC - but you can. All of these languages are available, for the C64, from Adamsoft, a well-established purveyor of Commodore commodities.

The company resides at 18 Norwich Avenue, Richmond, Lancashire, OL11 5JZ and, as the advertisements have it, send an SAE for full details. Prices vary from £12.95 for Fortran up to £39.95 for Super Pascal or Super C - there should be something to suit every wallet.

A C64 IN A POKE

For infinite fun on a Wodolator, join 1044.128 and for the same feature on Fox Fights Back join 7754.041. In the game 1943, for infinite energy for player one, you must poke 13101, 95 and for the same thing for player two you must poke 41516, 8. Keep those pokes coming, by the way.

Pete Gerrard



AND THE WINNER IS...

I've been positively overwhelmed with competition entries from prospective owners of MacPlus, but, as difficult as I found it, I've managed to pull just one winner from the hat, and that Lucky 88 winner is Mr Arthur L. Morris of Tregaron, Dyfed. Well done Art, your name is ringing its way to you-men-as I write.

What do you think of competitors Artie's Roadrunner readers? Do you want more or would you prefer fewer? Write and let me know.

DESKTOP BLUES

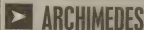
Have't you ever looked at the ST and wished that our favourite machine had a 'Desktop' just like the 16bit Am?!

Time was when every small computer boasted straight into BASIC the way the XL/XC does, but now, most machines have a user interface which exploits them to perform various filing and operating system tasks before (and even while) running other programs.

Londor-based Alan Bell specialist Computer House has developed an addition board that provides an operating system interface of fonts, default colours, screen messages and a whole host of other things, enabling you to create a custom machine interface.

You can also drop screen grids to disks or printer and screens applications. Sounds exciting, right? Now that the Christmas season is over and things have quietened somewhat, I'm going to try to get a board reviewed.

Edmund Blake



A LOT OF KNOWLEDGE

After the short term in Knowledge Organizer KD in this column a couple of weeks back, Claret was good enough to send in a copy of the package itself.

The program consists of a single disk with a slim, ring-bound manual built to a cardboard folder. The manual is concise, but mixes factual and reference material in a sometimes confusing way.

Once backed up and run, however, the program exists on the menu bar as normal. Not fully RSC-aware, the program nonetheless is happy to work with other applications installed, and they will restart on leaving it.

The program is of particular value to anyone compiling references, perhaps for a book or thesis. It makes the job of crossreferencing a whole heap easier by maintaining entries in four related files. These detail the extract itself, its source book or periodical, the subject headings to which it relates (50 'concepts') and the links established for each item within the database.

As data is entered, each piece of text has to be filed under its headings and source. Thus, when a subject search is made using a matching heading, the text item is returned as a reference. It works in a similar way to Hypercard, but with an imposed structure.

The text editor is adequate, but the intention is that references will be exported to a word processor for final formatting or inclusion in a document. As well as entering text directly from the keyboard, there's an option to transfer it

from a Z88 via a serial link - a good idea for anyone researching in libraries.

KD can search through a text file according to a good set of criteria. To find a reference with links to a number of headings does require repeated searches, though. There's no way of specifying a search for any references leading to heading 1 AND heading 2 in one operation. As KD doesn't multi-task, it's not possible to transfer text directly into or out of a word processor, either. It has to be done by file export, which results in some of us and goes against the Arch philosophy.

Even with these flaws, Knowledge Organizer is a useful product in an interesting new market. If you need to gather together facts in a flexible way, KD will speed the process and work with your favourite word processor.

WATFORD MEMORY OFFER

It is more than gratifying to see that Watford Electronics has continued its pre-eminence as an Arc dealer by offering a series of highly-desirable Promos.

For a limited period the company is offering a 512K upgrade with any new A3200, while offering an extra megabyte (1MB) trial and a 20MB hard disk with the A4101 - both of which come free of charge.

In addition, all A310s will be bundled with Watford's own Real Time Video Digitizer, and the A401, which will include a Taitan 770 Plus Multisync monitor. This seems like a very good time to take the plunge if you haven't already.

QUICK BACKUPS

When making a backup of a disk, it's easier to go with the MOS, as you can add the Q (quick) parameter to the command, and force the Arc to use all available memory during the transfer.

This often means that a backup will only take a single pass of source and destination disks. The full command is: `move -source -destination Q` where -source and -destination are drive numbers. You must quit any applications before using this option or risk losing data.

LETTER COMMENT

Three hearty cheers for that noble Express reader who refers to himself as Elias Bradshaw-Lettes, issue 54. This gentleman obviously has the right idea about getting a few things, could be let a few of his comments know the truth about the Arc?

Additionally, would the good editor please consider my application for the position of Real Arc columnist for Express? My qualifications include not only an excellent typing skills (with note, but I also have an insatiable curiosity when it concerns the proper knowing of my favourite disk. I will travel far and wide to the most remote of a good post. But, that's not all, I am, in addition, the proud owner of a C64B4 park, which I keep always to hand in my highly-regarded Arkia, which itself resides next to my much-prized weekend in my briefcase.

Bertrum Carrot

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THE SHOPPING EXPRESS GUIDE TO PC ESSENTIALS

The PC has an enormous range of high-quality software available for it, but the choice can be bewildering. Read on to discover the Shopping Express guide to 50 indispensable programs

There's probably more software for the PC than for all other machines out there, so a comprehensive list is clearly impossible. Choosing the best My programs is impossible too - it depends on what you want your PC to do. But here's the Express list of the 50 programs we think should be at the top of your shopping list. Word processors, home accounts, spreadsheets, programing utilities... the list goes on and on. We've cut down our categories to include software that you can't afford to be without, at home or at work, the essential PC software.

We give what we consider to be the absolute best program or programs in each section, together with a brief description of each, and a few highlights and drawbacks. There's also the availability details. Though as ever, check the real order ads in Shopping Express first. You're sure to find some excellent discounts available.

WORD PROCESSORS

● PROTEXT V4

£100 • Arnes • 0733 68909

For sheer first and fire handling Protext stands out. It's fast, flexible and full of features: good spell checker and mail merge facilities so powerful you can write programme text and the handling routines. For writers and journals this is a must.

- ▲ Fast
- ▲ Spell checker
- ▲ Powerful mail merger
- ▲ Powerful macros
- ▲ Loads of extras - calculator, word counter etc
- ▲ Two file editing

▼ No real graphics capability
▼ Not great at handling complex layouts

VALUE FOR MONEY *****

● TASWORD

£50 • Tasman Software • 0532

438301

Superb value and fast. A few odd irritations but an excellent basic word processor.

For TasSpell, the spell checker, also available, along with TasFiles, the memory resident version of the processor.

- ▲ Memory resident and fast
- ▲ Easy to customise
- ▲ DOS shell macros
- ▲ Word count, subpage features etc

▼ Cherry text insertion
▼ Some limitations - find and replace won't accept spaces, blocks must be whole lines etc

VALUE FOR MONEY *****

● CELEBRITY

£80 • Software Paradise • 0222

887521

A well designed word processor with a lot of extras and plenty of social for the first time user. It doesn't show the compromised usual with beginner's packages.

- ▲ Good clear command structure
- ▲ Calculator, calendar, DOS manager etc
- ▲ Thesaurus and spell checker
- ▲ Up to four text windows

▼ Thesaurus US and a bit slow
▼ Window dimensions fixed

VALUE FOR MONEY ****

● MULTIWRITER 2

£115 • NewStar Software • 0245

205017

A very powerful package that includes many features usually found only on really expensive word processors. WordStar does commands can be excluded directly in a document so this may be ideal for WordStar diehards. Lots of extras - author's abilities and a filing program, for example.

- ▲ WordStar compatible
- ▲ Good menu and context sensitive help
- ▲ Extras: contents and index generator etc
- ▲ Filter utility

▼ Filter awkward to use

VALUE FOR MONEY ****

● BORLAND SPRINT

£199.95 • Borland • 0734 320022

A highly powerful word processor - certainly worth looking at if you need the complete works. Breathtakingly fast with an auto-save feature that means even if the power goes your document has been saved exactly as it was at that moment. Comes with font sets that make it look like WordStar, WordPerfect, Multimate or Microsoft Word if you're used to these packages. A bit complicated to use though and modified on C, which doesn't help.

- ▲ User interfaces for WordStar etc
- ▲ Thesaurus and check-as-you-type spell checker
- ▲ Cross-referencing
- ▲ Very powerful indexing facilities
- ▲ Laser and PostScript support

▼ Very complex to use - only get it if you really need all the power
▼ Still a few little bugs

VALUE FOR MONEY *****

● MICROSOFT WORD

£99 • Microsoft • 0734 550743

Another of the heavyweights. Packed with every feature you can imagine, but you're paying for it. Easy and intuitive to use for such a high-powered package - ideas outlines, contents/indexing and footnotes, very good graphics facilities - and of course it runs under windows and OS/2.

- ▲ All the heavyweight features: thesaurus, spell checker, author utilities
- ▲ 12x6 outline
- ▲ Good graphics import facilities
- ▲ Runs with windows and OS/2
- ▲ Easy to use

▼ Very pricey
▼ Need a powerful machine - slow unless you have a 286 or 386

● WORD PERFECT

£250 • Sentinel • 0932 231164

Successful the biggest selling word processor on the PCs. A huge program with everything you could ever need: thesaurus, spell checker, his column set, footnote and index generation, automatic

table insertion, and notes, mathematical symbols etc etc. Frankly though a disappointment for the huge price; only any use if you're already committed to the program because of training - or if you can get it on expense.

- ▲ Everything you could ever need in a word processor
- ▲ Exemplary manual
- ▲ Available on minis, mainframes as well as micros

▼ Vastly expensive
▼ Some very complex keystrokes for functions - must be learned by rote

VALUE FOR MONEY ***

● CHIWRITER

£32 • Shareware Marketing • 0297

24088

The word processor for scientists. Originally a shareware product, this word processor lets you design and use pre-designed fonts for scientific use. Can cope with any mathematical symbols - even the most complex integrals for example. The most impressive WYSIWYG you'll ever see! Might be worth targeting on a couple of months for the PC version of LotusScript though, which will no doubt outperform Chiwriter for less money.

- ▲ Handles any maths - integrals, complex set theory symbols etc
- ▲ Does foreign characters too
- ▲ Footnotes and text design

▼ Limited as a word processor: no mail merge, word count only after spell check
▼ Only one document at once
▼ Hidden extra costs for hi-res or screen

VALUE FOR MONEY ***

● TOPCOPY PLUS

£109 • Innova Software • 0453

835379

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520 STE Power Pack.....£322

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MANNESMAN TALLY

Mannesman MT 81 Dot Matrix.....£115

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REPAIRS FOR AMIGA AND ATARI

Handling together with the speed of operators makes it ideal for people who short test around a lot, good spell check and mail merge too.

A Memory resident

A Can Import text from defined areas of underlying screens

A Auto reformat but still fast

A Three files on screen at once, handles up to six documents

A Spell checker and mail merge

A Very fast

Y One or two useful commands missed (eg. save letters)

Y No auto backup of files

VALUE FOR MONEY ****

● GALAXY

Shareware • Advantage/PSGL • 0242 224340/0892 663298

One of many shareware word processors that resembles WordStar. Doesn't compete with ones you get a hundred quid for, but for the price you get a usable program ideal for occasional use.

A Menus

A Spell checker

A Bargain price

Y Restricted power - best for occasional user

SPREADSHEETS

Probably one of the primary uses for PCs, the spreadsheet is the staple of the small business user and some of the best around are available for the PC.

● VFP PLANNER PLUS

£172 • Paperback Software • 0245 265017

Fully featured, Lotus 1-2-3 compatible spreadsheet generally held to be the ultimate in PC spreadsheet programs.

There's support for a mouse as well as multi-dimensional financial modelling.

A Comprehensive

A Complex modelling can be achieved

A Reasonably priced (there's a cut-down £115 version too)

Y Difficult to learn

Y Hard drive and printer required

● LUCID 3-D

£91 • PCSG Inc./Software Paradise • 0222 887521

Cheap spreadsheet from PCSG lacking graphics but with the ability to perform most of the necessary functions.

There's no 'minimum hardware' requirement and it's cheap. Also features 3-dimensional linking of cells from different spreadsheets.

A Cheap

A Linking of separate spreadsheets

A No minimum hardware requirement

Y No graphics

● THE TWIN

£27 • Mosaic Software • 0604 830496

Cheap Y cheerful spreadsheet that is the younger sibling of the outrageous

named Legend: Twin Level III. The Twin is an almost exact copy of Lotus 1-2-3 at a fraction of the cost of that copy-righted program. Well worth £3 quid.

A Cheap

A All of the features of Lotus 1-2-3

A Powerful graphics

● LEGEND: TWIN LEVEL III

£207 • Mosaic Software • 0604 830496

The spreadsheet that sounds like an adventure game. Blow deep into the powerful Lotus 1-2-3 features such as 3-dimensional cell linking, graphics and database functions.

A 123 features provided

A 3-D cell linking

A Powerful

Y Not for the spreadsheet novice

● PC-CALC PLUS

£27 • Shareware Marketing • 0297 24068

Cheap basic shareware spreadsheet that is nonetheless good quality. All necessary spreadsheet functions implemented. You can get a version of this spreadsheet complete with - cut-down - manual for five quid from PC user groups. Full documentation will require registration with Shareware Marketing and the handing over of the full price.

A Cheap, cheap

A Easy to learn

A Available from user groups

Y Basic

DATABASES

Everyone needs a database. From business use such as motor car parts, baked beans stocks and can opener suppliers to home use such as stamp and record collections and train number catalogues.

● DBASE IV

£395 • Ashton-Tate • 01-5699766

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A Complex

A Can be tailored to suit individual needs

A Industry standard

Y Expensive

Y Not for beginners

● DBXL 1.2 DIAMOND RELEASE

£115 • Software Paradise • 0222 887521

dBase clone featuring all the abilities of the original with a better text editor, variable arrays and user defined functions at an affordable price.

A Cheap

A Very powerful

Y Difficult to master

Y Not for beginners

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• Easy to use

• Cheap

• HYPERPAD

£114 • Software Paradise • 0222 887521

Apple Macintosh users have long had the opportunity to use the definitive associative database handling of Hypercard based on the concept stacks of interconnected cards each containing various data, programs etc., all accessible via a series of icons 'buttons'. And now, at last, this power is available to the humble PC user with Software Paradise Hyperpad. All the features of the original system are here.

• Comprehensive

• Easy to use

• Moderately priced

▼ Setting up may confuse absolute beginners

COMMUNICATIONS

Get a yen to communicate with your fellow PCers? Need to transfer data around the planet? Maybe you want to connect several computers together to maximise your peripherals?

• THE \$25 NETWORK

£25 • EQ Consultants • 0334 84248

Networks abound at the moment but you'd be hard pushed to find one that would get you back less than several hundred pounds, before, that is, the release of The \$25 Network from EQ Consultants. For the tiny figure of 25 quid (EQ also, hold no stock in exchange rates) you can join two PCs in perfect harmony, to have and to hold, from this day on...

• Amazingly cheap

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• LINK MASTER

£19.95 • Anstrud Software • 0277 235222

Billed as the 'concrete kit for the transfer between two PCs' thereby implying a hard/software cable of thousands, Link Master is a cable and bit of software for £20 that allows you to transfer files between two PCs. Why not just use

floppy disks? Or, perhaps that would be asking just a little too much (perhaps it wouldn't)

• Cheap

• Easy to use

▼ Superfluous

▼ Unnecessary (unless you have machines with wildly differing drive formats)

• PROCOMM PLUS

£50 • Shareware Marketing • 0297 24058

Polylined general purpose communications program for use with modems. The program supports the industry-standard Hayes command language and seven file transfer protocols. There's an earlier version known as Procomm which can be had from the same supplier for a low quid.

• Reasonably cheap 'n' cheerful

• Hayes compatible

• Plenty of file transfer options

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Very powerful accounting package emanating from well-known accounts software writers MicroSoft. Menu driven program, ensure ease III use and give access to virtually every possible accounts function necessary. There's some extremely good help screens too in case you should encounter difficulties.

• Menu driven

• Fully featured

• Easy to use

▼ Too expensive for the home or small business user

• A-B-C

£299 • A-B-C Systems • 01-661 0468

Quality accounting package that has the distinction of sporting a word processor, database and spreadsheet as well as the accounting module. All the features of a professional accounts application are built into A-B-C as well as good after sales service and help.

• Built-in word processor, spreadsheet and database
• After sales service
• Can be used on single disk systems

▼ A little expensive for home users

• PENNYWISE

£50 • Buzz Software • 0385 56083

Simple to use, affordable accounts analysis software for the home and small business user.

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• Easy to use

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- ▲ Powerful
- ▲ Features packed
- ▲ Reasonably priced

▼ You need to have a semblance of understanding of basic accounting before being able to use to the full

● TAXCALC

£19.95 • Consumers Association • 0800 252100
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- ▲ Very cheap
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- ▲ Uses ordinary cheap dot matrix printers
- ▲ Lots of features

▼ Beyond the budget of the average home user

● NEWSMASTER II

£70 • NGA Microsystems • 0233 83971
Straightforward, unpretentious little desktop publisher, providing most of the features necessary to produce newsletters, propaganda pamphlets, commentaries etc.

- ▲ Cheap
- ▲ Clip art library
- ▲ Can import graphics

● FINESSE 2

£171 • Logi UK • 0625 413501
GEM-based, Windows look-alike providing many of the abilities of the original for a fraction of the price.

- ▲ GEM/3 included
- ▲ Sensibly priced
- ▲ Good graphics import

▼ You must have a mouse

● TIMEWORKS DTP

£129 • Electric Distribution • 0480 486789
Another desktop publisher with slightly more than a passing resemblance to industry-favourite Windows. Lots of features, can use standard dot matrix printers and has a copy of GEM/3 included.

- ▲ GEM/3 included
- ▲ Powerful
- ▲ Reasonably priced

● VALUETIME RANGE

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- ▲ Very cheap
- ▲ Very easy to use
- ▲ Good results can be obtained

LANGUAGES

Don't buy commercial applications programs, write your own...

● ZORTECH C V3.00

£57.44 • Zortech • 01-316 7777
Professional quality C compiler from well-known language provider Zortech. The package is cheap yet fully-featured. Very fast.

- ▲ Fast
- ▲ Cheap
- ▲ Widely available

▼ Standard C tutorial text necessary

● DBFAST

£113.85 • Megatec • 01-874 6311
dBase clone at a fraction of the price of the original program. This is not for beginners but fortunately there is a small plane's worth of dBase text books on the shelves of your favourite bookstore. What are you waiting for?

- ▲ Very cheap
- ▲ Powerful

▼ Not for beginners

● QUICKBASIC

£86 • Microsoft • 0734 576744
The standard for learning BASIC programs and producing them in the business community. QuickBasic is the grown-up sibling of all these home computer BASICs. Lots of features.

- ▲ Industry standard
- ▲ Fast
- ▲ Powerful

● TURBO PASCAL VS.00

£115 + Postcard UK • 0734 320022
Known and loved by all, this is the Pascal compiler. Its built-in debugger has good editing facilities and is easy to get to grips with. Perhaps a little expensive.

- ▲ Powerful
- ▲ Good editor
- ▲ Can be used on single drive systems

▼ A little overpriced

GAMES

Not formerly associated with games playing, the drop in the price of the average PC compatible has set off a chain reaction amongst leisure software writers eager to cash in on a new market.

● G88 ATTACK SUB £29.95 • Electronic Arts • 0753 46445

Send a mass 88 Eastern Bloc seafaring metal to Davy Jones' locker. Alternatively, take command of Soviet Russia's latest submarine and go fascist hunting. Either way, this game provides everything necessary for superior submarine simulation. Nifty military.

- ▲ Wonderful graphics
- ▲ Complex
- ▲ Quality gameplay

▼ VGA necessary for best display
▼ Expensive

● FLIGHT SIMULATOR 3

£52 • Microsoft • 0734 500741
The latest in a long line of definitive flight simulators from Microsoft for the PC and its compatibles. This program has 8 1/2 for those looking for quality simulation rather than blood 'n' guts. Expensive, but then the best always costs more. Invest a few quid here.

- ▲ Super graphics
- ▲ All controls found in a real aircraft are simulated
- ▲ Lots of places to fly around, through, up and over.

▼ Expensive

● ELITE

£24.95 • Firebird Software • 0666 504326
Originally for the BBC micro and now available to discerning PC game players everywhere. Improved graphics and speed but a similar old bombing wrong with that I hear you shout.

- ▲ Old faithful too good to be missed
- ▲ Wonderful graphics
- ▲ Fast

▼ Expensive (the eternal PC games critic)

● F-19 STEALTH FIGHTER

£29.95 • MicroProse • 0666 504326
Another flight simulator but this one pits

you fairly and squarely against an attacking enemy bent on destruction. Good graphics and good fighting action make this a superior offering.

- ▲ Complex
- ▲ Good graphics

▼ Expensive
▼ A little boring in the early stages

● INFOCOM ADVENTURES

£24.95 to £34.95 • Infocom/Mediamagic • 0754 311666
Here they are. The definitive text adventures from Infocom. Reviewed by by those who like to grub about in haunted houses, caves etc., the world over. Good plots and lots of puzzles to solve.

- ▲ Complex plots
- ▲ Intelligent dialogue
- ▲ Excellent input parsing

▼ Far too expensive

● UNIVERSAL MILITARY SIMULATOR

£24.95 • Rainbird • 01-240 8838
The package that lets you simulate everything from a petty squabble to a full-scale conflict. Each voyage in favoured click with every battle throughout creaky old history.

- ▲ Complex situations can be simulated

▲ Any and every alteration from the dawn of time can be played to its logical conclusion

● TETRIS

£19.95 • Microsoft • 01-628 1454
Tetris is a simple but highly addictive game in which you have 10 arrange into lines a series of tumbling coloured blocks into to clear screens and amass points. Delaying categorisation the game has added novelty of emanating from the USSR.

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PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
PC2080E		2581	1625	1625	1710															
PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
PC2080E		2581	1625	1625	1710															
PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
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PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
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PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
PC2080E		2581	1625	1625	1710															
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PC2080E		2581	1625	1625	1710															
PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
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PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
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PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
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PC2080E		2581	1625	1625	1710	Model					Model		Mono CGA EGA			Model		Mono Col EGA		
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PC2080E		2581	162																	

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BIES & PILES		NOVEL NETWORKS		POINT-TO-POINT SOFTWARE		POINT-TO-POINT SOFTWARE	
	Price						
Master Modem V31-1200/2200s-V23	E119	NETWARE 386 V3.15	£472	Amix Prosigner V3	E90	Almae V3	E320
Adapt in Isop 64K Buffer Chip	E120	NETWARE V32 V2.15	E284	Amix V4/V5 V3	E90	Almae V4/V5	E320
Logitech ScanMaster - software	E121	NO 7000 Patcher	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
Hard Card 2.5 - 16MB	E122	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2000s Hard Card 2 yr Warranty	E123	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E124	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E125	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E126	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E127	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E128	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E129	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E130	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E131	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E132	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E133	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E134	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E135	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E136	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E137	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E138	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E139	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E140	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E141	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E142	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E143	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E144	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E145	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E146	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E147	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E148	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E149	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E150	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E151	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E152	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E153	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E154	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E155	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E156	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E157	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E158	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E159	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E160	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E161	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E162	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E163	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E164	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E165	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E166	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E167	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E168	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E169	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E170	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E171	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E172	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E173	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E174	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E175	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E176	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E177	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E178	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E179	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E180	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E181	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E182	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E183	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E184	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E185	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E186	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E187	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E188	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E189	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E190	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E191	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E192	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E193	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E194	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E195	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E196	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E197	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E198	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E199	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E200	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E201	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E202	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E203	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
2.5 - 16MB Floppy Drive	E204	NETWARE 3.15 V3.15 V3.15	E160	Amix V4/V5 V3	E90	Almae V4/V5	E320
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● REALTISER PRO 8900

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Until recently you could not grab colour pictures on an ST. Dragging the ST into colour meant using a mono digitiser and a camera to grab the original image, and then slaving over the draw and fill features in your favourite paint package.

Even so, the quality and speed of digitising has steadily improved to the point that Rombo's Vio ST will grab images virtually in real-time, and at a high-resolution when used with a monochrome monitor. But although Rombo has been promising a colour add-on for some time, it has yet to arrive.

But now Third Coast has come up with the goods.



• Grabbing an image means setting up your camera and playing with different filters, but the result is colourful. But you still won't be able to throw away your paint package. The image here was touched up using Digas Elite.

GRABBING THE COLOUR

with a machine imported from Germany. Pro 8900 will produce quality monochrome grabs to the same standard as Rombo's device, but colour is what elevates it to stardom. However, glory doesn't come cheap: at £150, the Pro 8900 is 250 more expensive than other digitisers on the market.

FILTER TIPS

The Pro 8900 package consists of a cartridge, filters and controlling software. Instead of combining colour and monochrome versions all in one program, there are different programs available depending on your requirements. For example, there are two monochrome versions - one grabs high-resolution black and white images when used with a mono monitor while the other grabs them at lower quality or a television or medium-resolution monitor.

To use the digitiser, you'll also need to lay your hands on a monochrome camera. Setting up the hardware is remarkably easy. All you need to do is take a lead from the camera, plug it into the digitiser cartridge and then plug the cartridge into your ST.

HOW IT'S DONE

Although only a monochrome camera is used, colour grabs are possible through the use of colour filters. Digitising is performed in three stages - red, green and blue. Placing the red filter over the camera lens and

Third Coast's RealTiser Professional claims to make high-quality colour video grabbing possible on the Atari ST. Mark Higham colours in the details.

then clicking on 'Real Digitiser' grabs the red found in the picture. Not only pure red areas of the image are grabbed but also the red shades found in other colours such as purple. By repeating this with blue and green filters and then combining all three images, a full-colour picture is obtained. Although the process is fiddly, it does cut down on the expense of a colour camera.

The software is surprisingly easy to get to grips with. To digitise, you go to the 'Digitiser' drop-down menu and select each of the colours - red, green and blue - in turn. Another menu gives you the option to combine the three images and display the result.

This professional version of the RealTiser differs from its predecessors in the way the digitising takes place. Previously, the screen was filled almost instantly with the image and any movements seen by the camera were shown on screen. When you were happy with the display, you pressed (ESC) and this image was assumed to be the correct one.

Here, digitising takes place more slowly. The screen gradually fills from left to right with the image

seen by the camera. Although this method means the image must be kept perfectly still for longer, the result is a much higher quality picture. Since red, green and blue grabs can be made in any order and at any time, if you spot any problems, you can go back and grab just one colour.

For the first few experiments, this is all you will use. But later you will find the 'Preferences' option a big help. This gives you the opportunity to change the amount of red, green and blue seen by the camera, as well as varying the saturation level - set it high for a brighter image. The preferences only affect the grabs as they are made and won't alter existing pictures.

To alter existing grabs you have the 'Change Colours' option where you are able to toy with the colour palette. In the final picture, the colour palette is adjusted to translate the wide spectrum of colours found in the image into 16 ST colours. You can change the shade or colour of any of these and then save it in Digas or Naoscolour formats.

RESOLVING PROBLEMS

To an extent the ST's screen-resolution is one of the biggest limiting factors: after all, you're never going to be able to see photograph-quality images on a 320 x 200 pixel screen. Bearing this in mind, the RealTiser Pro 8900 fares very well, producing high-quality grabs which compare favourably with other video digitisers on the market.

Nevertheless, if you expect to grab an image and leave it at that, you're going to be in for some disappointments. Because of the crude system of filters used in the grabbing process, this colour in your picture tend to be very bland. Highlighting them means going back to your trusty paint package and playing with the colour palette. This makes the Pro 8900 an exciting and relatively cheap toy, but digitising still has a long way to go before you can throw away your trusty Olympus Trip. ■

ON THE VIDEO FRONT

If you want to grab images directly from the back of a video recorder, your ST or even from a Sega home console, you don't need to spend hours focusing a camera on the screen. Instead, you can buy an RGB splitter which takes away the need for cameras and filters and opens up enormous possibilities for taking some electrifying grabs.

An RGB splitter works with any colour digitiser on any computer, but until recently they've been the on

the ground. However, Third Coast is now selling a splitter as part of its digitiser line-up. Lashed out £190 and you can buy the most boring-looking black box ever.

The only moving part of the splitter is a dial which can be rotated between Red, Green, Blue and Monochrome modes. The image from your video recorder goes in one end, with the output going off to the digitiser. The splitter replaces the filters by dividing a composite signal

into its separate red, green or blue images, depending on the position of the dial. A higher-quality picture is possible since the process doesn't depend on cheap filters.

Although splitting an image into its composite colours is far easier than playing around with filters and a camera, it does have its own interest problems. If you rely on the less-than-perfect freeze frame of a video recorder you can have some sleepless nights in store.

THE BEGINNER'S GUIDE TO

Anyone who regularly uses a personal computer will at some point exclaim "If only it were hand". Whether it's that brainware that's just come to you on the 14th day, that quite for a deal you don't have the figures for, or just one more chance to take out those MG 21s while you're waiting in a traffic jam, a computer at your fingertips can seem essential. But choosing the right one to meet your needs may depend more on your wallet than your desires. So where do you start? Begin by asking yourself these general questions:

Q. What kind of portable should I consider? Aren't there thousands of them out there?

A. Just about, yes. Newer a week goes by these days without some newer, smaller, more powerful and impressive portable being launched. At the current performance top-end are the fast 386 PC-compatibles, while LCD technology is now delivering colour screens. If compactness is what you're interested in there's a whole range of notebook-sized machines.

Q. So what's the difference between portables, hand-helds and notebooks?

A. Portables follow the design of a briefcase with the screen forming the inside lid. They offer most of the power and functionality of a desktop machine, albeit with a mono display. Apart from Atari's Stacy and a few aging CP/M machines, they're all PC-compatible and use 3.5-inch disks. Amstrad, Compaq, NEC, Panasonic, Psion, Sharp, Sanyo, Tandy, Toshiba and Walters are just a few of the companies manufacturing them. You can spend between £200 and £5,000 on a machine depending on the speed of the chip at its heart - 8085, 286 or 386 - the number of disk drives, and the presence of a hard disk.

Hand-helds are flat thin slabs with a smaller built-in screen which offer fewer features at a lower price and don't come with disk drives. The two main contenders are Cambridge's Z88 and Tandy's 102 - both handy for note taking and featuring integrated built-in software. The screens are smaller and the keyboards

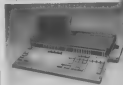
Buying a portable is one thing, buying a useful portable is quite another. Express guides you through the factors to take into account...

not as responsive, but they're lighter, faster to use and the batteries last longer. Data can be transferred to your main machine via a cable.

Notebook machines are for the most part intended as small, super-calculators with database abilities. Two popular models, the *Organiser* from Psion (£95) and the *Agenda* (£195) also feature non-standard keyboards so they can be a pain to use. But newer models like the Atari Portfolio (£249) and Pregel PC

• Psion's *Organiser* has only limited non-handling facilities

• Amstrad's portable, the PPC1640, is a well-specified but bulky beast



(£1,200) offer proper keyboards, readable displays and some degree of PC compatibility.

Q. So how do I begin choosing the right one for my needs and budget?

A. The best advice we can give is for you to draw up a list of factors that matter to you. This might read something like:

- Size
- Weight
- Screen
- Memory
- Keyboard quality
- Software available
- Ease of transfer
- Battery life
- Portability

In that order to start with. Then go through each one and weight them according to your needs. If you do a lot of typing or taking notes in your line of work then you'll probably want something with which you can word process with ease with an excellent screen display. But you might want to trade off ease of use against the unit's weight - you don't want to have to start taking body-building lessons do you?

Q. What if I need to refer to information I have on my machine at the office?

A. Then you're likely to need a lightweight notebook



• Toshiba has a reputation for producing high-quality portables, like the powerful T1600.

FEATURES AT A GLANCE

TYPE	PORTABLE	HAND-HELD	NOTEBOOK
COST	£800 - £4,700	£290 OR MORE	£39-£1,200
TYPE	DISK-BASED PC COMPATIBLE	A4-SIZED LAPTOP	POCKET COMPUTER
SCREEN	'CLAM-SHELL' 80 CHARACTERS ACROSS 25 LINES	BUILT-IN 80 CHARACTERS ACROSS 8 LINES	BUILT-IN 40 CHARACTERS ACROSS 4/8 LINES
MEMORY	640K MINIMUM	20K-256K	64K-256K
KEYBOARD	FULL-TRAVEL IBM	RUBBER MEMBRANE	MOSTLY NON-QWERTY
SOFTWARE	FULL RANGE OF PC 3.5-INCH SOFTWARE	SUITE OF INTEGRATED, NON-STANDARD SOFTWARE	LIMITED MEMO- TYPE FUNCTIONS
TRANSFER	JUST SWAP DISKS	SPECIAL SERIAL LEAD & SOFTWARE	SPECIAL SERIAL LEAD & SOFTWARE
BATTERY LIFE	3-5 HOURS	20 HOURS OR MORE	4 MONTHS OR MORE

COMPUTING ON THE MOVE

machine that will give you facts fast and will allow you to transfer your data both ways to keep it up-to-date. But then again you might deal with massive amounts of information – spreadsheets packed with formulae and databases bulging with detail. Then you'll need a fast chip, a lot more memory and maybe even a hard disk – the sort of power that won't leave you or your client dropping off to sleep while you wait for the facts to appear.

Q. What about the software? Not all portables take disks do they?

A. No, here it's a straight choice between buying a portable that uses 3.5-inch disks and a hand-held or notebook which uses memory cards or RAM packs. Running your favourite software is no problem on the former, but with card- or pack-based machines you'll be restricted to using the built-in programs and will need a lead to transfer your data files to and from your desktop model.

Q. What kind of software comes built-in with the smaller portables?

A. All hand-helds and notebooks come with some form of word processor, database, spreadsheet and appointment diary built-in, though the amount of resident RAM will lead to big differences between the scope of the applications. Some of the more compact models will offer just a simple note-taking facility instead of a word processor, a calculator instead of a spreadsheet and a memo pad instead of a database. But then the prices of these machines range from under £100 to over £500, so to some extent you should expect to get only what you pay for.

Q. What machines would you suggest?

A. Ah, decision time, decision time... was it value for money, performance or screen quality you had in mind? At the end of the day the decision is yours and you have to live with the result, so make sure you go to a High Street store and have a go on the machines you are considering. You can always actually buy one from a mail order company! But in the meantime, here are a few suggestions.



• The Psion MC400 is the pick of the laptops.



• A non-standard 2-inch disk drive sets the Zenith MiniPort apart.



• Tandy's popular 1400LT, a good-value portable.

since it uses non-standard 2-inch floppy disks. At these prices you're paying for innovation, while yesterday's bulkier models are coming down in price. A particularly good buy is the Tandy 1400LT at £320 which offers dual 720K floppy drives and 768K of memory. It also shifts along at nearly twice the speed of a standard IBM XT. Otherwise, one of Psion's innovative new MC range is well worth a look – at £370, the MC400 is the most useable with built-in microphone and speaker for voice-dictation storage, 256K of memory and a good range of on-board integrated software.

HAND-HELD

With only the Tandy 102 at £140 complete against, the Z88 at £267 should have cleared up by now. But in terms of usability – good keyboard, readable display and simple file transfer to external machines – the Tandy is probably the best buy despite the higher price. Both machines are slim enough to fit easily into a briefcase and come with useful integrated software. But the Z88, despite the lower price, simply doesn't have enough memory to write anything more than a couple of pages of text, unless you fork out for extra RAM packs.

NOTEBOOKS

There's only one real contender here and that's the Atari Portfolio at £250. At this price and with these features it's the ideal pocket-sized computer. Similarly-sized machines like the Organiser and Agenda don't come anywhere near to it in terms of usability. The Portfolio comes with an industry-standard-compatible spreadsheet on ROM for instant loading, built-in calendar, word processor, phone book and time dialler with a useful 128K of RAM to work with. File transfer to desk-bound machines is easy, and the screen display and keyboard are of a good quality. If you can both find and afford one, the Pocket PC is a better machine though. It offers full PC compatibility, an 80 x 25 character display, and 640K of RAM. Besides using program cards supplied by leading business software companies, you can link it up to your desktop machine to read and write to its disk drives. At £1,200 it may be relatively expensive but it's the current state of the art in compactness. ■

PORTABLES

Until recently the portables market was dominated by machines that had only just made it off the desktop – seemingly hundreds of juggles like the top-selling Toshiba. But now machines from Zenith, like the MiniPort at £1,400, and Compaq's LTE286 at £2,500 combine significant advances in miniaturisation with none of the loss of features previously associated with greater compactness.

The MiniPort really is a little beauty. While it's not too fast, it's certainly snail – 30cm x 25cm x 3cm and weighing only 2kg, and it comes with 1Mb of RAM. You can also fit an external drive, which is a good idea

der-compatible spreadsheet on ROM for instant loading, built-in calendar, word processor, phone book and time dialler with a useful 128K of RAM to work with. File transfer to desk-bound machines is easy, and the screen display and keyboard are of a good quality. If you can both find and afford one, the Pocket PC is a better machine though. It offers full PC compatibility, an 80 x 25 character display, and 640K of RAM. Besides using program cards supplied by leading business software companies, you can link it up to your desktop machine to read and write to its disk drives. At £1,200 it may be relatively expensive but it's the current state of the art in compactness. ■

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Machine Type: _____

Age: _____

NICE 20

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TECH TIPS

■HELP! Vogaries of VGA

I bought an ICL PC-compatible black-and-white monitor at a sale, catalogue number 541901, to use with my VGA PC. My problem is that the D connector is a fraction too small on the monitor lead and the lead is wired in B! the monitor. Can you tell me if it is VGA and if there is an adapter that may help it to fit?

Peter Bailey, Surrey

Patric, who told you this monitor was VGA? And what do you mean by "...D connector is a fraction small..."? A fraction small or a foot too big, either way, this D connector is not meant to plug into your PC and never will. It's not VGA either, so probably wouldn't be of much use to you.

If it is at all possible to retrieve your cash then do so at all speed. If not, then bring an item Shopping Express and offload the ICL onto some unsuspecting reader...

■TIP When I'm C64

I read with interest your reply to Brian Stevenson's letter (Express 83). I have recently upgraded to an Amiga, but am still a quiet fan of my humble little Commodore 64. It's fantastic and Commodore ought to be shot for not supporting it any more.

Anyways, you may be interested to know that there is at least one firm who still love the C64 and welcome all users with friendly chat, loads of free expert advice and all sorts of games - including disk notches! The company's name? Meadmore, and their number is 051-521 2202, although I'm not sure of the address.

Gordon Mac, Boodle, Merseyside

Absolutely! A bit of good natured defence is what giving a humble nudge is all about. Gander, I'm awasting you Uncle Tech's "my machine's a dead fish but I still love it" piece of the week. A dull thud on the doormat will signal the arrival of the Amigaish brat currently winging its way to you...

■TIP Files on the Sega

I am the owner of a brand-new Sega Megadrive (Japanese model). As I am sure you know, this system is known as the Sega Genesis in the United States. I

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Uncle Tech Tip, he'll see you right. Send your sorry stories to Uncle TT, 30 Monmouth Street, Bath BA1 2AP. There's a prize for the most pitiful tale

ordered two games and when they arrived they were marked Genesis system only. These games fitted into the cartridge slot but the machine would not switch on.

After examining the Japanese cartridges (these did work) against these that would not work, I found that the difference was that the Japanese machine has a cartridge lock to stop the cartridge being withdrawn when the machine is on - the American Genesis machine does not.

To remedy this problem, put both cartridges aside by side and carefully mark

where the missing slot should be, then slowly file a similar slot on the American Genesis cartridge with the thin side of a woodworker's flat file.

Take your time! Is the watch phrase here, you don't want to go into the side of the printed circuit board inside the cartridge and ruin the game.

For will find that if you have added the slot in the right place and to the correct depth, the machine will switch on and work perfectly.

Chris Norris, Blackley, Manchester

■HELP! Infection detection

With Windows 3.11 and the new virus detection software from Compaq Express detecting the Office of Windows 3.11, I thought I had found that my new Windows 3.11 computer had become infected with a virus and was able to detect it. I thought I had found that my new Windows 3.11 computer had become infected with a virus and was able to detect it. I thought I had found that my new Windows 3.11 computer had become infected with a virus and was able to detect it.

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■HELP! STE problems?

I am a new computer user and have just purchased an Atari 1040STE. My reasons for purchasing this model were:

1. I needed an affordable word processor, hence a 1040 rather than a 520. I also purchased GST's 1st Word Plus software package.
2. I also wanted to play games.
3. I wanted to be able to exchange software with my brother who has an Atari 520STFM.

All the research I was able to do before I purchased suggested to me that rather than buy the old 1040STFM model, I should invest in the newly-available 1040STE.

I assumed therefore that all software currently on the market would be compatible with the STE, including games. I therefore purchased two games, neither of which would load into the computer. After a few seconds of loading the disk drive light goes out, and that is it. 1st Word Plus loads and works perfectly, so it is not a faulty drive. Incidentally, this month's ST Format cover disk will not load either.

It would seem that I have bought a computer that will not run any of the vast array of games titles currently on the market. Should I ask my dealer to swap my STE for an STFM? Will the games manufacturers swap current software purchased for upgraded compatible ones? Is my machine faulty?

Mark Foster, Ealing, London

There is nothing wrong with your computer. There is nothing wrong with your disk drive and not is there anything wrong with the software packages that you've bought. Unfortunately, the games - and a good few others - won't work with the STE due to the software houses responsible relying on tables of the earlier ST hardware in order to provide protection against copying.

What happens is that STFM drives can read 82 tracks on a standard floppy disk, even though under normal circumstances the drives only read and write 80 tracks. Software houses have made use of these extra two tracks to locate protection system code. Your STE can't access these two tracks, so the software behaves as if it was a pirate copy and refuses to load. You get to see the final results - the drive light stops after just a few moments but nothing happens after that.

Many, many games are suffering from these problems. If software houses had stuck to Atari's programming guidelines then none of the problems would have occurred.

OK, that's the reasons why, but how is the situation going to be rectified? Well, like all things 20th Century, it's a question of money. Games have a short life on the shelf. Newly-released examples which are proving popular will be converted. The big sellers of yesterday are history, and will not be converted. New titles will take into account the differences in the STE and will work perfectly. Do not exchange your STE for an STFM. Atari plan that the STE will completely replace the STFM, and for the same cost as the latter, you've got the former with III's extra bells and whistles. It will take a little while for software houses to catch up and this may be a frustrating period as you look on with envy as STFM owners run *Populous*, *Kick Off*, *Speedball* etc! But take solace in the fact that you have the Atari machine of the future, now.

HELP! Exotic font

I recently bought an Atari ST, mainly for word processing work, because my writing is really hard to read. My friend recommended the Atari to me because he had one and it would be easier for me to familiarise myself with it, and that has paid off. Sometimes, however, I need a Cyrillic font, and I would be grateful if you could tell me if it is possible to incorporate this font into the Word Plus program, or if you know of any programs that might have Cyrillic letters. I have tried for a long time to find something but have had no luck. M. Huzar, Sherwood, Nottingham.

Rajesh, M. Huzar, for your long search is at an end! The Signum Document Processor from Signa Publishing is one of the very best word processors on the UK market today. It has many powerful features not least of which is its ability to use fonts other than those necessary for the English language - you guessed it, one of these 'others' is the Cyrillic font. You can contact Signa Publishing on 0252 341602.

HELP! He's dead, Jim

I have just bought a copy of *Star Trek V* for my PC. On the box it said 640K minimum. My PC has 640K of on-board RAM. For some reason though, the game loads, shows a wonderful VGA picture of the Enterprise and then crashes. My brother says it's III because DOS uses up some of the memory loading. Is this true and if so is there a way to take DOS out of the memory? I have tried the EMT command. I would be very grateful for any suggestions as I have not yet played it! Michael Pitt, Runcorn, Cheshire.

OK, games are popular, right? Popularity means that the games are

written for every conceivable machine under the sun in order to extract the most profit from a limited market. No-one bothers with more than 640K RAM on a humble old PC (OK, OK some self-styled power users do, but I'm referring to Joe/Joe public) so software houses release 640K machines give over some of their RAM to the operating system. The problem doesn't lie with your PCs perfectly adequate memory.

You didn't tell me anything about your machine, brand, resident adapter cards, display, anything! Do you actually have a VGA display and card? If not, then running the VGA version of the game isn't going to achieve anything. Write again, telling me all about your set-up and maybe I'll be able to help. If you've told me the software house

responsible for *Star Trek V*, I could have provided their telephone number.

HELP! Losing your voice

I am the proud owner of the Spectrum Plus 3 computer which I've had for about a year and which I use for several projects, but mainly for composing with my Yamaha PS480 keyboard. This is the only I cannot seem to use more than one voice on the Yamaha when controlled by the Spectrum. Can you please tell me how I go about assigning voices and channels so that I can use my keyboard and Spectrum's MIDI port to the full? Rita Tolén, Ely, Cambs.

To make use of more than one voice you must select using the Spectrum's

PLAY command. First, however, the PS480 must be set to mode 92. Once done, the PLAY command can be used to assign voices and channels. Codes are sent from the Spectrum in the form of two bytes, the first a status byte which informs the Yamaha PS480 that a voice is about to be selected and which channel it should be assigned to. The status byte ranges in value between 192 and 257, and includes the channel number (193=channel 2, 194=channel 3 etc).

The second byte denotes the voice to be used and covers the range 0 to 134 (these are printed on the front of the keyboard). So if you wanted to select the electric bass on channel 5 and the flute on channel 10, you would enter:

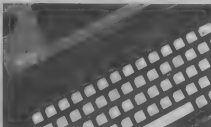
10 PLAY "21940270122"

HELP! Printing out from a pocket Portfolio

I am a PC user and have to take my work home with me sometimes, so I decided to invest in an Atari Portfolio which I find is very good. I sometimes need a hard copy of some of my files and to do this, I have to run back to the office with the file first thing in the morning.

I have now decided to invest in a portable printer. Can you please give me some advice on portable printers? I would like a dot-matrix, battery- or mains-operated device which will take two sheets of A4 with a sheet of carbon in the middle, and it must be quiet. I have seen Kodak's portable printer from Wiso. Also can you please tell me what is the difference between a dot-matrix printer and an ink-jet printer, and which is better. M. Solaal, Alexandria, Dumbartonshire.

Last things first. 'Dot matrix' means that the printer has an oblong matrix of steel pins usually arranged in a 9 x 7 formation. To create characters, the pins are fired through an inked ribbon against the paper in much the same way as typewriters drive paper through a ribbon. Using combinations of these pins, almost any character can be formed. The dot-matrix impact printer is also very fast but can be rather noisy. Inkjet printers work by spraying tiny quantities of ink via a matrix of 'nozzles' onto the paper to be printed on. There's no impact and



• Atari's Portfolio - finding a suitable portable printer

consequently the inkjet printer is very quiet. It's not quite as fast as the dot-matrix variety, and you must be a little careful with recently printed documents if you create smudges. However, the quality of type produced by the inkjet is far better than that of the dot-matrix.

After flourishing in the early Eighties, portable printers became almost unheard of, but are now making a comeback. Two of the better offerings are the Kodak Dicom 150 (plus mentioned in your letter) and the Toshiba Expresswriter 30i which is slightly larger. Neither of these manufacturers are well-known for their printers, but both portables offer a healthy turn of speed, quality construction and reasonable price.

But which one should you choose? Well, let's compare their

specifications. The Kodak machine provides print speeds of between 120 characters (CHR) and 29 characters (NCR) per second. The Expresswriter can only manage between 60 and 42 characters per second, but does provide better results via its 24-pin thermal transfer print head (the more pins, inkjets or whatever, the better the results will be). The Kodak accepts both single sheets and fan-fold paper (useful for long listings), and as it is a dot-matrix device it can produce carbon copies, whereas the Expresswriter can only deal with single sheets. The Expresswriter is larger and heavier than the Kodak Dicom but does provide better battery life (60 minutes compared to 50 minutes).

Both machines have a parallel interface and 2K print buffer as standard. The Expresswriter (345)

weighs in at 254 less than the Kodak device (3289).

Price is obviously going to be a consideration, but £50 either way when you're already spending almost £400 is not much to pay for the features you require. If you do need to carry the printer around a lot and want something small and neat then choose the Kodak machine. Its built-in Epson FX-80 emulation (as opposed to the Toshiba's Epson LC650 emulation) will ensure that the device is completely compatible with all applications.

If, however, the printer will spend a lot of time sitting on your desktop - and you're trying to pare costs to a minimum - plump for the Expresswriter. Slower, but with a better print quality.

Kodak can be contacted on 0442 61122 and Toshiba can be found on 0278 62222.

This week our series on PC-compatible computers turns to keyboards and monitors. Which graphics standard is best for you? Mike Harrinko has the answers.

MONITORS

The most powerful tools in my personal arsenal are my mouse, the keyboard and the monitor. It's weird, I'm realizing, that today I'm doing more paper-based work than ever, but I've got these tools to help me do it. I'm not just a "PC" user. You are, either.

the figure. IMF, which is a highly correlated with β of Kees, These were based on the standard parameter bias found in the OLS to a negative. CDFITY condition, the numbers listed above the line, to the left of the CDF, generally were negative, the PC test by function bias of F-tests. These function bias were equal zero, depending on the application of the word – indicating, for example, that the hypothesis is on the right of the signified bias were either negative or positive. It is important to note here, that the number the sign of where you are in a decision (the up, down, left or right). Also other specific bias using the hypothesis is left to the number of molecules, as the number – considered the

& KEYBOARDS

The first stage in the development of a new product is the identification of a market need. This is often done through market research, which can be carried out in a number of ways. One way is to conduct a survey of potential customers, asking them about their needs and preferences. Another way is to observe how people use existing products and identify any problems or areas for improvement. A third way is to consult with experts in the field, such as scientists or engineers, who can provide valuable insights into the latest developments in a particular area. Once a market need has been identified, the next stage is to develop a concept for a new product that meets this need. This involves brainstorming ideas and selecting the most promising one. The concept is then refined through further research and development, taking into account factors such as cost, feasibility, and potential competition. Finally, the product is tested on a small scale to ensure it meets the requirements of the market. If the results are positive, the product is ready for full-scale production and distribution.



The enhanced keyboard also has 'home' keys (little ridges on the [F] and [J] keys which are of great benefit to touch typists) and an improved layout. Originally, there were two versions – the enhanced XT and the enhanced AT. The only practical difference was that the enhanced AT keyboard had little lights.

These days, the enhanced keyboard is the standard. Increasingly, modern software assumes that this is the keyboard you will have, and forces you to use sequences of keystrokes which are uncomfortable on the original model. To create confusion, advertisements normally refer to the enhanced AT keyboard (the enhanced XT is now a thing of the past) simply as an AT keyboard. If someone tries to sell you a PC without an enhanced keyboard, ask them why.

CHIBRALES

There are some keyboards which do not follow the conventional pattern. Most infamous is that which comes on the Amstrad PC1512 and PC1540. This is almost the same as the 84-key keyboard, but not quite. Although it is possible to get used to the idiosyncrasies of its layout, some of your software may not be at all that easy to use. Never mind – the machines cost so little it's worth putting up with. If you do have one of these machines, replacement enhanced keyboards are now available. The one provided by Everham Micro is particularly good.

Laptop and portable computers also have unusual keyboards. This is because the 84-key and 102-key keyboards are too large for most portables (only Amstrad and IBM retaining them for their laptops) so individual vendors have been developed. Some of these are stapled/crammed, but most are usable. Toshiba does a particularly good job of exploiting a small space.

FEEL

Layout is not the only consideration when choosing a keyboard. Another important factor is 'feel'. This refers to the positive reaction that your fingers get from the keys – or the lack of it. Some of the worst keyboards come from Amstrad (the PC1512 item was once memorably referred to as being like 'beating dead fish') and some of the best are from IBM (although NT3 and Digital Matrix both use a keyboard which is even better than IBM's). The difference between a good keyboard and a bad one is simple: good keyboards use individual microswitches for each key which go click when you press them. Bad keyboards use a single rubber membrane which doesn't.

MONITORS

The thing that sits on top of the system unit and looks like a TV screen is called a monitor. It can also be called many other things, and it's worth knowing its

synonyms so you can not sagely when somebody else mentions them. After monitor, the most common is 'screen' – a bit slangy, but OK. You still hear people talk about VDUs (for visual display units). This is like calling a record deck a gramophone, or a digital tuner a wireless – not recommended if you want to get a good discount out of a computer salesman or to sound authoritative in the pub. You may also see or hear CRT (for cathode ray tube) or simply 'tube'. Equally rare, but still just about surviving, is 'console'.

A monitor is your window into what the PC is doing. At its most straightforward it can display text: it can also display highly-sophisticated graphics images at a higher resolution than your TV.

In the beginning, there were only two types of monitor. To be accurate, there were actually two types of adapter. If you want to attach a monitor to your PC

(and you do) you must first plug in a card to act as an interface. This is known as a video adapter, and it is the most important element in deciding how good an image you will see on your monitor.

The first two adapters were the Monochrome Display and Printer Adapter (MDA – usually known as just the MDA) and the Colour Graphics Adapter (CGA).

MDA

For traditional word processing, an MDA is fine – providing 80 columns by 25 rows of high-resolution text on a traditional green screen. However, it does not show any graphical images – it can't draw lines. The MDA is almost never seen now, but if you see one second-hand and only want to work in 'text mode' it is perfectly adequate.

CGA

The CGA can show graphics as well as text, and can do so in four rather messy colours. The tick-off, unfortunately, is that the resolution is nowhere near as fine as on the MDA. Nine years on, the CGA is still the entry-level colour adapter, seen on machines such as the Amstrad PC1512 and a whole host of other cheap clones. Except for games (which really need the colour) you are better off with a Hercules adapter (see below) for most uses. Unusually, the Amstrad PC1512 mono model uses a more implementation of CGA.

HERCULES

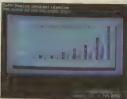
The first video adapter to combine sharp text with graphics was the Hercules, which came out in the early days of the PC. If you bought a Hercules adapter, you replaced your MDA with it and suddenly your green screen could draw pictures. Because the 'Herc' drew to a finer resolution than the CGA (allowing more dots on an equivalently-sized area of the monitor) it soon became the first choice for more precise computer graphics, such as computer-aided design (CAD). The Hercules (or, to be precise, cheap clones of it) is now the entry-level PC adapter. For business use its finer resolution (giving less stressful use) knocks spots off the CGA. Some programs require CGA, but public domain CGA emulators for the Hercules can be had for a fiver and work well.

EGA

As far as IBM was concerned, there was only one thing wrong with the Hercules adapter – it wasn't made by IBM. To this day, it is the only graphics standard which has become truly established yet hasn't come from within Big Blue's own labs. IBM fought back with 1984's Enhanced Graphics Adapter (EGA). This provided text that was nearly as sharp as on the MDA, together with crisp 16-colour graphics. It was very well received despite its high price, and only began to fade



• Colour VGA screens offer the best (and most expensive) displays.



• CGA offers low-resolution graphics with tedious text – avoid unless you really need the colour.

from view in the past year. The Amstrad PC1640 uses the EGA standard in most of its manifestations, although the CGA versions are available and the mono version (junkie the PC1512) uses Hercules graphics. These days, EGA is something of a dead duck, superseded by the more advanced VGA (see below). But it is still pretty good.

VGA

With the launch of the PS/2 in 1987, IBM introduced a new graphics standard - VGA (Video Graphics Array). This differs from the previous standards in that the adapter produces an analogue rather than a digital signal. In practical terms, this means that special monitors are needed. VGA allows up to 256 colours on screen at any one time (or 64 shades of grey in its mono version) and supports a number of very-high-resolution modes. VGA is the business standard now and as more and more programs come out to exploit its facilities, it is getting more and more desirable. If you can afford a VGA machine, buy one.

OTHER STANDARDS

The Amstrad PC1512 actually possessed a superset of CGA which allowed 16 colours to be displayed at once. Some programs were announced which supported this mode, but few are now available. The 16-colour mode was clever, but never established a standard and should be treated as nothing more than a curiosity these days. Tandy has a similar mode on many of its machines which is supported by a number of American programs - mostly games. The Tandy Graphics Adapter is now an interesting footnote in the history of the PC and not much more.

The Professional Graphics Adapter (PGA) was an attempt by IBM to crack the lucrative scientific market. It offered billions of resolution at a ridiculous price and sold in minute quantities.

Since VGA came out, a number of manufacturers have offered enhancements to the VGA standard. These include Super VGA, Enhanced VGA and IBM's own, charmingly-named 8014A adapter. None of these has yet succeeded in forcing a standard although one of them undoubtedly will in time. The latest bet is the IBM version, despite its high price. Come back in 1990 for further details.

THE SCREEN

The MDA and Hercules adapters both use the same set of monitors - basic mono models. These days they are available in three flavours: green, amber and 'paper white'. Green is the traditional data processing version although amber is often felt to be more useful. These days the 'paper white' screen is taking over, and is certainly a lot more pleasant for jobs such as desktop publishing - unless you habitually use amber paper, of course.

CGA cards use CGA monitors; it's as simple as that. EGA, on the other hand, can drive either special EGA monitors or monochrome monitors as used by MDA and Hercules.

The analogue signal used by VGA demands analogue monitors. These are available in colour or mono, and are more expensive than the CGA- and EGA-compatible models.

The most general-purpose monitors are called multi-sync monitors. These can be used for digital or analogue signals - for any type of display.

SIZE ISN'T EVERYTHING

Monitors come in a variety of sizes, and it may seem as though bigger is best. This isn't necessarily the case, however. The most important thing when using a monitor is to gain clarity, and this is very much a function of 'dot pitch'. Put simply, this is a way of describing

the distance the screen's dots of light are from one another. Simple mathematics tells us that if 1,000 dots are put into an area six inches square, and then 1,000 dots are put into an area a foot square, the dots will be closer together in the smaller area. This can be seen on television, where a little portable will frequently have a clearer picture than the 29-inch behemoth sitting in the corner of the living room.

Since a computer screen contains a fixed number of dots, it can therefore be seen that a small screen will

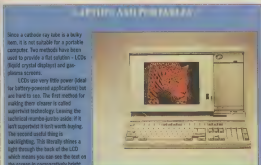
typically be clearer than a big one. This is not always the case, but the technology necessary for a crap 20-inch screen costs a huge amount of money. For normal use, a screen of between 12 and 14 inches is about right. In VGA situations - where it really counts - look for a dotpitch of about 0.30 (0.27 is really good and 0.40 is awful).

Anti-glare screens can dramatically improve the clarity and business-on-the-eye of a monitor, and are worth investing in.



COMPATIBILITY

<p>Amstrad PC1512/1640/1640C compatible - they all drive the standard Hercules/MDA/EGA/CGA monitors.</p> <p>Amstrad PC1512/1640/1640C compatible - they all drive the standard Hercules/MDA/EGA/CGA monitors.</p>	<p>Amstrad PC1512/1640/1640C compatible - they all drive the standard Hercules/MDA/EGA/CGA monitors.</p> <p>Amstrad PC1512/1640/1640C compatible - they all drive the standard Hercules/MDA/EGA/CGA monitors.</p>	<p>Amstrad PC1512/1640/1640C compatible - they all drive the standard Hercules/MDA/EGA/CGA monitors.</p> <p>Amstrad PC1512/1640/1640C compatible - they all drive the standard Hercules/MDA/EGA/CGA monitors.</p>
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Since a cathode ray tube is a bulky item, it is not suitable for a portable computer. Two methods have been used to provide a flat solution - LCDs (liquid crystal displays) and gas-plasma screens.

LCDs use very little power (ideal for battery-powered applications) but are hard to see. The first method for making them clearer is called superlight technology, leaving the technical mumbo-jumbo aside. If it isn't superlight it isn't worth buying. The second useful thing is backlighting. This literally shines a light through the back of the LCD which means you can see the text on the screen in comparatively bright light. Backlighting eats battery power but turns the laptop PC from a toy into a useful tool.

Colour LCDs have been developed, but they are a few years away from being affordable. LCD these days means bright blue text on a pale-blue background and emulation of CGA or EGA. One or two VGA laptops exist and they really are

rather nice, if inordinately expensive. Gas plasma technology is really only suitable for mini-powered portables, because of the power overhead. Gas plasma screens glow with a rather ethereal orange light, but are good and clear. Most still

emulate CGA, although VGA is becoming more common.

Since laptops are necessarily monochrome, it is worth testing software on them to ensure that red or blue menus don't appear as bright orange or bright orange.

• Gas plasma VGA displays give excellent results.

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Route of the problem

I was amazed to read the article in Express 52 entitled 'Piracy Ban Blues'. I, like all my ST-owner friends, have got the demo of the Notebook Autotrader and feel that it is excellent and that a lot of work has gone into the program.

The £150 price tag was far too much for me to buy the program, but I did take the demo version into work, where we have a 1945 ST, to see if I could get them interested in the full-sized version. Unfortunately, they already had the PC version of it.

Even the special Christmas offer, with the £50 price tag, is far too expensive for the casual user to justify, when £50 can buy a bare 650 disc drive and 80 nearly the price of a half-megabyte memory upgrade. Furthermore, unlike a word processor, you would not need 80 use it every day.

To claim that they haven't sold many copies for the ST at the £50 mark because of piracy is absurd. I am sure that most small companies in this country use PCs, rather than STs, and will have already purchased their copy of Autotrader.

It is a good program, but I am sure that, unless the price is reduced to a realistic level for the average ST user, their sales will remain sluggish!
Keith Rider, Kingston, Surrey

Signing on 1

For the last few years I have been involved with SUG, the Spectrum Unemployed User Group. I have now upgraded to an ST and, finding no similar group for this computer, I have decided to form the STUG.

The main aim of the group is to exchange news, views, ideas, and PD software - only PD policy will not be tolerated. The exchange will be done with a regular, free, disk-based magazine.

Membership is a once-only fee of £1, and the magazine is available to any member that sends a disk and an SAE. The benefits, at the moment, are 15% per cent off orders from MT Software and PD at registered prices from 1632 Software. I am negotiating other benefits.

If anyone is interested write for the first issue of STUG magazine - don't forget the disk and the SAE.

Dave Burns, 278 Belgrove Park, Mitcham, CAM 32E

Signing on 2

I was involved in a very successful group user group for the unemployed computer enthusiast in Dublin where we set up a public domain service for many formats. We also started a virus checking service, held meetings, had outings and received great support from computer shops which provided free games, blank disks, stationery and publicity.

I would love to repeat this in Britain, and my idea is to set up a club, with indi-

vidual sections run by a small number of dedicated users for as many formats as possible. Further, the sections would, if possible, set up their own PD and information services.

A newsletter, including information from each section, would be produced bi-monthly and would, I hope, also include a *Dungeon Master/Chaos Strike Back* column, users' ads, a help column and a section for each of the computers.

EXPRESS MAIL

Britain's liveliest computing forum packed with comment, controversy and conflict. Write and tell us what you think. Reach us at: Express Mail, 30 Monmouth St., Bath BA1 2AP. Sorry, no personal replies, even with an SAE. This week's replies written by Martyn Lester.

To set up such a large user group we would have to make a small charge to members to cover mailing, PD software, putting together and printing the news letter. To comply with Government and LA regulations a set of accounts would be produced at the end of each year.

I would be most grateful if you could please print my name and address so that interested people could contact me about

the ideas above. And if you are interested, do not hesitate!

Paul Matthews, 216 West Pilot Crossway, Edinburgh EH4 4ED

I reckon the first thing you two guys should do is to get in touch with each other without delay. Do let us know how you get on - and information on other similar groups will be equally welcome. As a one-time regular US40+

Sega superiority and the shame of software houses

I enjoyed the article in Express 52 about the ST and thought 'Sega MegaDrive' was a bit of a pity.

I am, first of all, a computer player, and I'm intrigued by the comparison between the ST and the MegaDrive.

Understandably, people have been invited to write to you about the ST and the MegaDrive, and I'm sure you'll get a lot of letters.

Sega's games are better than the ST's, but the ST's games are better than the MegaDrive's.

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MEGA DRIVE WARNING!

Sega of Japan and Virgin Mastertronic, as the exclusive authorised distributor for Sega in the UK, strongly advise all potential customers against purchasing 'grey' imported 16-Bit MegaDrives.

Mega Drives which have already reached the UK have been unofficially converted to run on the PAL system; this work has NOT been authorised by either company and therefore the hardware is NOT covered by any guarantee of safety or workmanship and will NOT receive any after sales service from Sega or Virgin Mastertronic.

Sega also announce that 'grey' imported Mega Drives will be incompatible with the software which will be marketed in Europe when the official Mega Drive is launched later this year, and that owners of the 'grey' imports will not therefore be able to run this software.

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career, I wish you all the best of luck in any scheme that makes life on a low income a little less of a grind – especially at those times when it feels as if the system has it in for you.

And may I also take this opportunity to say a very belated 'rah, boo, socks' to the Civil Service malice who insisted that I would never ever become a journalist.

■ Airspace code!

May I comment on two Activision games I recently received.

F4 Torment may as well be called 'Tactical' because I'm still in pole position and unable to start a career. While the flight mode is quite good, the enlistment scheme is ludicrous and unrealistic. You are supposed to follow another aircraft through its manoeuvres – Captain AS15 flies the aircraft sideways and briefly vertically. It is an exercise in response, and I have followed within half a screen-inch and landed well but cannot make more than 32 points out of 100.

Furthermore, the records in the file-view make no reference to the area that needs bushing up on. No career – no interest. I've tried for over 50 flights.

Fighter Bomber boasts 3D graphics etc but, once again, it is a ludicrous invasion. There must be 3,000 degrees in

Activision's circle; a change of two degrees at five miles from target would normally take half a minute, but with this simulation you could get 15.

It is impossible to do circuit and bumps, take-off or landing in any of their eight fighter bombers, and there is no realism in flying around an airfield that is so vast that there's no chance of returning to point of departure.

Why doesn't Activision take a leaf out of the book of Microprose – **F19 Stealth**. Aircraft control, navigation and handling during landing, with pitch and roll indication, displays excellent realism. I have asked for my refund – they are both worthless.

I wonder what **F29** Retaliator will be like – I will try before I buy next time.
J B Taylor, Turnbridge Wells, Kent

■ STE boot-boys

As an over-subscribed member of the Atari STE Boot Up Club I can congratulate Express on your scoop and thank you on behalf of our tormented members for consoling us in our hour of need?

I have the original version of **Arkadoid**, which performs satisfactorily, together with the re-released version by Ocean, which will not boot. It is painfully obvious that, independent of existing TOS 1.6 problems, the source of wholesale

booting troubles is the sophisticated software-protection subroutines employed by successful software houses.

I believe you should continue your present dialogue with our scattered, ever-increasing membership – but a slight change in direction would ensure the maximum of global satisfaction.

Instead of listing titles which give problems, wouldn't it be more positive to list software house titles which do not give problems? That way our members can build up the software collections we crave from the most-deserving software houses. Only then will we be able to ensure that Atari will correct this operating system.

The software houses should also be encouraged to get down off the fence and accept their share of responsibility.

MD – US Galt's **Slinder** will perform satisfactorily on the Atari 520 STE; I have managed only one success from eight purchases to date.

Jack Robinson, Shirley, Tyne & Wear

That's the problem with us cynical press hacks, we show no appreciable interest in running dog doesn't bite man stories.

Have you noticed those rotten people on Radio 4's **Today** programme do the same thing by failing to give out lists of roads unaffected by contrailows and not blocked by traffic jams?

Seriously, though, we really do not have the resources to do what you are asking. I can't find anyone who will make even a ball-park guess at the number of commercial ST games on the market, but I can lay my hands on one listing covering 500 or so for starters.

Admittedly, those that will not boot at all would show up quite quickly, but the others would need playing through to check that they don't crash. How long should each game be played for before we feel confident that we can assure readers that the game is clean. An hour, perhaps?

And whatever popular opinion may be, I can assure you that Express has nowhere near 500 games piled up around its office in any case.

If I were to go and look out with the company cheque book for every ST game I could lay my hands on, then pay someone to play them for five or six weeks, I think my managing director would very quickly invite me to become a member of one of the unemployed user groups [see elsewhere in this week's Express Mail].

Nice idea, but...

■ Grumble

Recently the disk drive in my second-hand 520 STEFM decided to give up and, tempted by the extra features offered by the STE, I decided to upgrade.

I rushed home and tried my original version of **Speedball** which, as you said in Express, failed to load, as did **Xenon**, from Ocean's Precious Metal Collection.

Out of curiosity, I tried hacked versions of these games (they came with my STEFM) and both games ran perfectly. This suggests to me that it is the copy protection that is the fault, not the program itself – so Atari was quite right in putting the blame on the software houses.

What makes the situation worse is that Microprose is not 'venting' **Speedball** even though it is only the copy protection that stops the game from running.

I would be very interested to hear software houses' reply to these claims.
ANDY

■ Quality bleed

I write with two questions and two comments on the current computer scene. Firstly, why has nobody reviewed/mentioned upon **Fast Lane**, a game which Articore has released for the Amiga & ST?

Although it has been available for about two months at least, I have only seen a small news item about its release; I don't recall seeing a single review of it in any of the magazines. I bought a copy for my Amiga and, despite the fact that I won the championship on my second attempt and never bothered with all the initial set-up, it really is quite good. Anybody get any comments?

My second question concerns **Clay Cars**, a program from Titus which I >

■ Taking yet more flak over Archie

I am a devoted reader with an Archimedes computer and I would like to draw your attention to the very small Arc section. Amiga, Atari and PC compatibles have at least a full colour page each but the Arc section is fitted into one corner of a black and white page.

I am thankful for this minute coverage, but don't you think that this superb machine deserves at least the same coverage as the others?

The Arc has been around for a while now and the software, being released covers the entire spectrum, it not in quantity certainly in quality, in comparison to packages like **Impressions**, **Multi-Gore**, **Pro-Artisan** and **Interactor**, the Arc stands way out from the crowd.

Few magazines have run columns for the Arc for more than a few months, and I feel that the machine needs more coverage.

This is particularly relevant with the advent of the latest ARM processor version 3 and the new range of machines that Atari will be producing in the near future. I hope you will be one of the first to help!

S H Mansfield, Margate, Kent

It's not that we don't love the Archimedes, it is just that the space we give over in columns roughly reflects the proportion of our readers

using the machine – that's why our **MacByte** column is so small as to be undetectable to the naked eye.

To be fair, the Arc gets a lot more news and features space than some of the other machines we cover.

Plus, if our read readership survey comes out to show that there are more of you out there than has previously been the case, we will certainly give the column size a serious rethink.



* Archie: a glorious machine starting to break clear away with the readership?

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Do you already own a computer?
If so, which one do you own?

have the good fortune to win recently. What the hell are you supposed to do? I have read the very brief instructions many times but I still can't work out what's supposed to be happening. I would be grateful for any clues you or your readers could provide.

My next point concerns the subject of games, particularly coin-up conversions. I'm sure I'm not alone in being sick and tired of the poor quality of these conversions compared to the standard of the original titles.

Companies, such as Ocean, who've got the money to secure a big name licence seem to care little about the quality; they know it will sell on name alone. Compare, for instance, Ocean's conversion of Chase HQ on the Amiga, a big-name, licensed coin-up, with F-29 Refueler, an original title that has been praised highly for its quality.

Furthermore, many companies place a screenshot of the version which looks closest to the coin-up on packaging and advertisements for all formats. One can pick up cassette boxes containing products for the Amstrad CPC and Spectrum and still find full-colour, high-quality screen shots of Amiga versions! This must be wrong, if not illegal (Trade Descriptions Act?). Surely this is a case of pure misrepresentation.

On the other hand, again in the case of Ocean's Chase HQ on the Amiga, I have seen an article, a video trailer, the original Ocean advertising and a 'screenshots' all looking completely different. Indeed, it has been commented that the video trailer was the original coin-up purporting to be one of the 16-bit versions!

The only way to discover what it is really like is to buy the product, by which time Ocean have got your money and it is too late. I am willing to pay the high price (£25) for software if the quality is good - but in many cases the price is simply not anywhere near justifiable.

Another point I would appreciate your comments on is the idea of getting companies to tender for game conversions. By this I mean that the contract to

produce a coin-up conversion would be awarded not to the highest bidder, but to the company that produced the best, highest-quality demo or mock-up of the finished game.

In this hard commercial world, surely quality counts for something? Unfortunately, high quality is chiefly in the interest of the computer gamers and, judging by the way some producers act, it is only the punter's cash, as much of it as possible, that they care for.

Finally, anybody out there want to give me a job? I have an HND in Computer Studies but no programming experience as such and I am finding it very difficult to secure a position even as a trainee programmer. Anybody?

Mr M R Sutton, Walsley, Walsley, Swanton

I'll bet that Ocean aren't the first to leap forward and make you an offer!

Plugging away

I would like to put Steven Wilds (Express 62) right on MSX software.

For months now I've been using a company called Teletask Hi Fi Ltd, 21 The Broadway, Bedford, MK40 2TL (Tel: 0234 56322), which has prompt, delivery-free software lists, new releases every month and extensive choice.

So who is Steve trying to kid? If he is, in fact, having difficulty in tracing the 'non-existent' MSX, perhaps he'd better try harder for the XE. Believe me, it's worth the hassle as both are truly excellent machines.

Jon Steele, Westwood, Peterborough

Attitude problem

I don't usually reply to letters featured in magazines, but feel that I must take Wendy Pitt of Cambridge to task (Express 55). How, in all seriousness, can she refer to ACE Right! Simulator as being: 'Really very good?' It's abysmal!

The response to both keyboard and joystick is non-existent and graphics

appear to have been drawn by my daughter, who is eight years old - sorry LIZ. Does Wendy work for Cascade, or A-Z Computer Services? Stick it Tomahawk, wotsake folks.

If you want a recommendation for anything for the PCW, go out right now and buy Micro-Design 2 - it's the best thing since glassnost. You can get it direct from Creative Technology in Uttoxeter - For more details telephone 0689 567160 - for £59.95 including p&p and a free extra loads disc.

PS: if you are wondering if its a case of the wolf and the sheep dog, no, I don't work for Creative Technology.

Phil Cole, Northham, South Yorks

Medium's message

I think that all the controversy generated by readers' letters and other articles on the STE could be quite misleading to anyone thinking of buying this machine. Yes, there are problems, but most are not real as services as people are making out.

It isn't true to say that you can't save Desktop preferences to disk. You can't save the screen resolution, but that doesn't mean you can't boot up a disk in medium res.

All you need to do is manually edit the 'DESKTOP.DIR' file where all the settings are stored. Load it into your WP and look for a line reading E 56 12 (the numbers may be different). Change the second number to a 12, then save the file back. In non-document mode, to your disk. You can now boot up in medium resolution. Easy!

It should be quite simple to automate the process, which is presumably what the Atari Helpline have done.

There may be lots of software that doesn't work with the STE, but that's hardly surprising for a machine with a new operating system and several hardware additions inside. It happened before when the RORL was launched to replace the 400/800 series.

Since all new software will be STE-compatible and many old files are being converted, I hardly think that anyone will be facing 'STE misery'.

I strongly suspect that these people complaining of strange happenings with the keyboard when using First Word have no real problem whatsoever.

They are probably switching on with a joystick plugged in, which will indeed confuse the keyboard controller and cause key presses to come out as completely different characters.

When using programs that require keyboard input, you must only connect the joystick after booting up. Use a joystick extender for convenience.

The new control panel will be available free by sending a copy of the system disk to the Atari Helpline. Phone first on 01-386 7773.

Paul Nixon, Sheffield, Beds

Thanks for the tips.

NEXT WEEK

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Series on PC-compatibles continues with a look at expansion and peripherals

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